2nd International Conference on Informatics, Engineering, Science and Technology (INCITEST 2019)

IOP Conference Series: Materials Science and Engineering
Volume 662

Bandung, Indonesia
18 July 2019

Part 1 of 3

ISBN: 978-1-7138-0917-3
ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PART 1

INFORMATIC & INFORMATION SYSTEM

APPLICATION OF WEB-BASED TRAVEL ATTRACTIONS AS A MARKETING STRATEGY 1
A P Sujana, M W Julian

CONTROLLING PRODUCTION ACTIVITIES USING INFORMATION SYSTEMS TO IMPROVE COST EFFICIENCY 7
R Sidik, V F Lestari, M B Winanti

SIGNIFICANT INFLUENCE OF INFORMATION TECHNOLOGY ON THE USE OF MODERN ACCOUNTING SOFTWARE 13
N Utami, H D Yulianto

CONTROL OF ELECTRONIC DEVICES USING SMARTPHONE-BASED VOICE IDENTIFICATION 21
S Sriwati, E Eruinsyah, S Karim, F Rahman

WEBSITE – BASED ON VEHICLE TRAFFIC MONITORING SYSTEM 28
P S Kurniati, A Puspitasari

WEB-BASED BUSINESS OPPORTUNITY 35
J Adler, S C Dewi

THE APPLICATION OF INTEGRATED EXECUTIVE INFORMATION SYSTEM 39
H S Soegoto

INFORMATION TECHNOLOGY FOR ACCOUNTING APPLICATION 47
Herlianti, T Tawami

BUILDING ENGLISH LEARNING APPLICATION IN UNIVERSITY BASED ON WEB AND MOBILE 53
H E Samudra, A Setiyadi

WEB-BASED ORDERING INFORMATION SYSTEM ON FOOD STORE 60
R Herikson, P S Kurniati

DESIGN OF INFORMATION SYSTEMS WEB-BASED CAR PARKING PLACE MALL 67
M H Ali, D Kurniawan

THE INFLUENCE OF FINANCIAL TECHNOLOGY IN FINANCIAL TRANSACTIONS 75
D W Firdaus, R K Aryanti

UTILIZATION OF ELECTRONIC MONEY 79
Surtikanti, R H Mustofa

DESIGN OF PROJECT DATA MANAGEMENT INFORMATION SYSTEM 85
A P Fadillah, D Fitriana

E-TRACKING APPLICATION FOR REPORTING INFORMATION SYSTEM 90
A S Sitanggang, SV Kusumaningrum

DESIGNING OF EID AL-ADHA QURBAN MEAT STOCK INFORMATION SYSTEM TO OPTIMIZE ITS DISTRIBUTION 97
H Hidayat, F A Munshi

ELEMENTARY SCHOOL LEARNING MEDIA APPLICATION BASED ON ANDROID WITH CUSTOMER SATISFACTION INDEX METHOD 106
A Anurrasyid, I D Sumitra

DEVELOPMENT OF E-RECRUITMENT AS A DECISION SUPPORT SYSTEM FOR EMPLOYEE RECRUITMENT 115
M R Fachrizal, N R Radliya, A Manik

SOCIETY 5.0: OPTIMIZATION OF SOCIO-TECHNICAL SYSTEM IN POVERTY REDUCTION 123
I Gustiana, W Wahyuni, N Hasti

INFORMATION SYSTEM FOR ASSET MANAGEMENT 129
R Fauzan, V Y Pamungkas, J C Wibawa

HYPER TEXT TRANSFER PROTOCOL FOR SECURING PACKET INSPECTION IN INTRUSION PREVENTION SYSTEM DEVICE 137
A Friyanto

BUSINESS PLATFORM MODEL FOR SMART HOME FOR TECHNOLOGY PLANNING TASK FORCE 143
Melyani Melyani, Raymond Kosala, Benny Ranti, Suhono Supangkat, Ford Lumban Gaol

FACIAL EXPRESSIONS RECOGNITION USING MARKOV STATIONARY FEATURE - VECTOR QUANTIZATION AND SUPPORT VECTOR MACHINE METHOD 152
I Maliki, F S Jarockohir

A SURVEY POSITIVE ENGAGEMENT OF LEARNING COMMUNITY FOR INFORMAL EDUCATION TO SUPPORT COMMUNITY 158
Winanti, Ford Lumban Gaol, Meyliana, Harjanto Prabowo

DESIGN OF THE INFORMATION SYSTEM FOR KINDERGARTEN LEARNING EVALUATION USED KANBAN METHODOLOGY 165
M Fitriawati, R H Lestari

IMPLEMENTATION OF ATTENDANCE SYSTEM USING RASPBERRY PI 171
A P Sujana, A Y Prastyawan

DATA MINING: THE CLASSIFICATION METHOD TO PREDICT THE TYPES OF MOTORCYCLE SPARE PARTS TO BE RESTOCKED 180
S L B Ginting, Y R Ginting, Sutono, A Rakhman

INFORMATION AND COMMUNICATION TECHNOLOGY DEVELOPMENT FOR ENTREPRENEURS 186
S Rahmawati, I Rochmawati

IMPLEMENTATION OF USER CENTERED DESIGN METHOD IN DESIGNING ANDROID-BASED JOURNAL REMINDER APPLICATION 193
I Afrianto, R G Guntara

FORECASTING METHODS COMPARATION BASED ON SEASONAL PATTERNS FOR PREDICTING MEDICINE NEEDS WITH ARIMA METHOD, SINGLE EXPONENTIAL SMOOTHING 199
I A Zahra, Y H Putra

IMPLEMENTATION OF CRITICAL PATH METHOD IN PROJECT PLANNING AND SCHEDULING 209
S Atin, R Lubis

IMPLEMENTATION OF DECISION TREE ALGORITHM IN CUSTOMER RECENCY, FREQUENCY, MONETARY, AND COST PROFILING: A CASE STUDY OF PLASTIC PACKING INDUSTRY 215
W Gata, Iskandar, H Basri, D A Puspitawati, S Hidayat, Walim

APPLICATION OF COMPUTER-ASSISTED ANALYTIC HIERARCHY PROCESS METHOD TO EVALUATE EMPLOYEE PERFORMANCE 223
S Nurhayati

DEVELOPMENT OF ENTERPRISE ARCHITECTURE PLANNING FOR SCHOOL BASED MANAGEMENT IN PUBLIC HIGH SCHOOL 230
I Tresna S, A Hadiana

WEBSITE DEVELOPMENT OF INDONESIAN ART HIGHER EDUCATION INSTITUTIONS HISTORICAL ARCHIVES 237
D Trihanondo, D Endriawan

THE EFFECT OF ELECTRONIC SERVICE QUALITY ON CUSTOMERS SATISFACTION AND LOYALTY IN ONLINE SHOPPING 243
L Kusdibyo, A Februadi

INFLUENCE OF FINANCIAL TECHNOLOGY ON NATIONAL FINANCIAL INSTITUTIONS..... 251
H Purnomo, S Khalda

MOBILE AUGMENTED REALITY FOR LEARNING TRADITIONAL CULTURE USING MARKER BASED TRACKING 258
B Arifitama, A Syahputra, S D H Permana, K B Y Bintoro

DESIGN OF STUDENT ATTENDANCE INFORMATION SYSTEM WITH FINGERPRINTS..... 266
M D Rahmatya, M F Wicaksono

FINGERPRINT IDENTIFICATION USING BOZORTH AND BOYER-MOORE ALGORITHM 271
S Supatmi, I D Sumitra

RISK ANALYSIS OF DUTCH HEALTHCARE COMPANY INFORMATION SYSTEM..... 278
R F Septian, G C Pamuji

WEB-BASED ACADEMIC INFORMATION SYSTEM 287
R F Syafariani, A Devi

QUALITY ANALYSIS OF MOBILE WEB SERVER 293
E B Setiawan, A Setiyadi, R Wahdiniwaty

COMPUTER-ASSISTED PERFORMANCE MEASUREMENT USING ANALITYC HIERARCHY PROCESS 299
A D Andriana, R Susanto

APPLICATION OF DISTRIBUTED DATABASES FOR INFORMATION SYSTEMS FERTILIZER MANAGEMENT 305
A H Ali, R A Nugraha

FUZZY LOGIC CONTROL APPLICATION: DESIGN AND SIMULATION FOR WASHING MACHINE 312
G G Hungilo, G Emmanuel, J Maiga, A J Santoso

USER INTERFACE DESIGN OF MOBILE-BASED COMMERCE 319
O A Supriadi

FORECASTING PAINT PRODUCTS USING ARTIFICIAL NEURAL NETWORK ALGORITHM 327
A Hadiansyah, I D Sumitra

EMPLOYEE RECRUITMENT ANALYSIS USING COMPUTER BASED WEIGHTED PRODUCT MODEL 334
R Susanto, A D Andriana

ANALYSIS OF FACTORS AFFECTING TUITION FEE IN A PRIVATE UNIVERSITY: A DATA MINING USING VAR MODEL 339
S Wahyuddin, Fauzi Insan Estiko, Estiko Rijanto

IMPLEMENTATION OF CRYPTOCURRENCY TRADING ON MARKETPLACE 347
D S Soegoto, I Ramadhan

DESIGNING OF APPLICATION FOR LEARNING SUNDANESE CULTURES 353
M B Winanti, A A S Nurjanah, I Pangaribuan

APPLICATION OF DATA MINING FOR INDONESIAN PRODUCTS EXPORT IN SOUTH KOREA USING CLUSTERING: INDONESIA TRADE PROMOTION CENTER BUSAN 359
C R M Pandin, Fahrudin

THE INFLUENCE OF GADGET TOWARDS INFORMATION TECHNOLOGY ADDICT AND PROCRASTINATION BEHAVIOUR 368
E. Susilawati

IT AUDIT GUIDANCE: SIDE BY SIDE COMPARISON 375
B R Aditya, Y Menzelthe

THE ABILITY SCORING MODEL OF SOFTWARE SUPPORT ENGINEERS BASED ON TECHNICAL AND COMMUNICATION SKILLS 380
P M Seta, Y H Putra

STRATEGIC INFORMATION SYSTEMS PLANNING USING THE TOGAF ARCHITECTURE DEVELOPMENT METHOD 386
M Sidiq, I D Sumitra

THE EFFECTIVENESS OF SMART WORKINARY FOR ATTENDANCE DATA DELIVERY AND INFORMATION BASED PAPERLESS SYSTEM 399
B Kurniawan, S Alviana

USE OF SMARTAPPS FOR ADMINISTRATIVE SERVICE BASED PAPERLESS SYSTEM 407
B Kurniawan

E-EVENT FOR PUBLIC RELATION SERVICES IN IOT USING OBJECT ORIENTED METHOD 414
L Melian, U T Anggara, A Nursikuwagus

E-TRANSACTION SERVICES FOR RETAIL BUSINESS PROCESS IN IOT USING OBJECT ANALYSIS AND DESIGN 419
T Hartono, F R Ramadhan, A Nursikuwagus

FORECASTING INFLATION USING SEASONAL AUTOREGRESSIVE INTEGRATED MOVING AVERAGE METHOD FOR ESTIMATES DECENT LIVING COSTS 424
R Fahrudin, I D Sumitra

SPEED CONTROL OF A MOBILE ROBOT USING FUZZY LOGIC CONTROLLER 433
R Hartono, T N Nizar

INTEGRATING THE READINESS AND IS-IMPACT CONSTRUCTS IN THE RURAL AREA CONTEXT: A MODEL DEVELOPMENT 440
E Firmansyah, D Yuniarto, D Herdiana, M Suryadi, A Subiyakto, A B A Rahman

TOLL ROAD ROUGHNESS INDEX FORECASTING WITH COMBINATION GREY FORECASTING MODEL AND SIMILARITY SPATIAL DATA 451
R Nurhadiansyah, A Hadiana

CLASSIFIER ALGORITHM WITH ATTRIBUTE SELECTION AND OPTIMIZATION FOR INTRUSION DETECTION SYSTEM 461
A R Syarif, W Gata, M Wahyudi, S Humaira

INFORMATION SYSTEM MODEL FOR RECYCLABLE WASTE MAPPING TO HELP INCREASE WASTE PICKERS INCOME 469
L P Hasugian, S L B Ginting, T M Rahayu, S Mauluddin, I Pangaribuan

BLIND SCANNER SERVER AND BATCH PROGRAMMING IMPLEMENTATION IN THE PROCESS OF AUTOMATICALLY SCAN DOCUMENTS 475
A Setiyadi, E B Setiawan

EFFECT OF PROFILE ON AUDITOR CERTIFICATION TRY OUT USING A COMPUTER BASED TEST 481
M.A Triansyah, Y H Putra

DESIGNING FOOD ORDERING APPLICATION BASED ON ANDROID 485
B Kurniawan, M F Abdul

CASHLESS IN ONLINE TRANSPORTATION APPLICATIONS FOR SERVICES BUSINESS 492
A Novitasyari, Widiastuti

DESIGNING INFORMATION SYSTEM RECRUITMENT PROFESSIONAL GAMERS WEB-BASED 498
A Priladha, A Setiyadi

INFLUENCE OF INFORMATION TECHNOLOGY ON COMPANY DEVELOPMENT 503
D A Wahab, T F Putra

INFLUENCE OF INFORMATION TECHNOLOGY IN ATTRACTING TOURIST INTEREST 513
E M Adigraha, Juanda

INFLUENCE OF INFORMATION TECHNOLOGY ON SOCIETY 520
D B Destriana, Juanda

ROLE OF E-CURRENCY APPLICATION IN SUPPORTING BUSINESS 526
L Warlina, A Alkhadad

IMPLEMENTATION OF DATA MINING SALES OF MILK USING APRIORI ALGORITHM METHOD 532
J Chandra, K R Dewi

LOOKING FOR TRANSACTION DATA PATTERN USING APRIORI ALGORITHM WITH ASSOCIATION RULE METHOD 539
Y Sutisnawati, M Reski

INFORMATION TECHNOLOGY BASED ON JAPANESE MARKETING TOOLS 545
A P Darusalam, Tatan Tawami

ANALYSIS OF REGIONAL FINANCIAL INFORMATION SYSTEMS AS A MEDIA OF REGIONAL FINANCIAL MANAGEMENT TRANSPARENCY IN INDONESIA 553
S Suryanto

THE EFFECT OF TEMPERATURE IN THE APPLICATION OF MESOPOROUS NANOMATERIALS BASED ON CARBON IN DRUG DELIVERY SYSTEM WITH IBUPROFEN 560
Maria Ulfa, Reni Alfi Ardini, Didik Prasetyoko

MODEL OF FORUM ISLAMIC BOARDING SCHOOLS APPLICATION BASED ON ENTERPRISE SYSTEM 566
K. Edi, Supriyati, S. B. Ramadhan

A STUDY OF APPLICATION AND FRAMEWORK SMART CITY IN BANDUNG: A SURVEY 571
M Fadli, I D Sumitra

THE PROTOTYPE OF TRAFFIC VIOLATION DETECTION SYSTEM BASED ON INTERNET OF THINGS 580
D Hirawan, A Hadiana, A Abdurakhim

C4.5 CLASSIFICATION ALGORITHM BASED ON PARTICLE SWARM OPTIMIZATION TO DETERMINE THE DELAY ORDER PRODUCTION PATTERN 585
H Setiawan, K Mukiman, Satria, S Hanadwiputra, A Suwarno

COMPARISON OF CRYPTOGRAPHIC ALGORITHMS GOST AND RSA 597
R B N Achmad

BECOME A MULTILINGUAL BY MEANS OF ARTWORK IN INFORMATION TECHNOLOGY 602
T Tawami, A N Yulianti

DESIGNING INDONESIAN GEOGRAPHIC APPLICATION 609
W Wahyuni, I Gustiana

THE APPLICATION LEAN SIX SIGMA METHOD APPROACH TO MINIMIZE WASTE 614
H Henny, I Andriana, A N Latifah, H Haryanto

WEB-BASED INTERNSHIP INFORMATION SYSTEM 620
N Hasti, S Lesari, I Gustiana

POVERTY MANAGEMENT INFORMATION SYSTEM APPLICATION AND IMPLEMENTATION 626
R Komalasari

PART 2

ONLINE DIPLOMA SUPPLEMENT INFORMATION SYSTEM MODELLING FOR INDONESIAN HIGHER EDUCATION INSTITUTION 634
A Heryandi, I Afrianto

USABILITY MEASUREMENT OF CLASSROOM BOOKING INFORMATION SYSTEM INTEGRATED WITH COURSE SCHEDULING INFORMATION SYSTEM 642
I Ikbal, S Mauluddin

STATISTICAL AND INTERPRETATIVE ANALYSES FOR TESTING CUSTOMER TRUST QUESTIONNAIRES ON IT GOVERNANCE 647
R Setyadi, A B A Rahman, A Subiyakto

INDONESIAN TEXT TRANSLATOR INTO DATABASE STRUCTURED QUERY LANGUAGE WITH MULTI PARAMETERS USING NATURAL LANGUAGE PROCESSING 654
G Hermawan, I Faturohman, N Isharmawan

MONITORING APPLICATION FOR CLEAN WATER ACCESS AND CLUSTERING USING K-MEANS ALGORITHM 660
N R Radliya, M R Fachrizal, A R Rabbi

REVERSE ENGINEERING IN STUDENT MARK RECAPITULATION APPLICATION 669
S Mauluddin, R Sidik

DESIGNING ENTERPRISE ARCHITECTURE PLANNING IN MOBILE NEWS APPLICATIONS USING TOGAF ADM 676
A Fergina, I D Sumitra

MAINTENANCE HELPDESK INFORMATION SYSTEM IN RETAIL COMPANIES 682
J C Wibawa, E Prasetyo, R Fauzan

DESIGNING OF RECOMMENDATION ENGINE FOR RECYCLABLE WASTE MOBILE APP 687
R Yunanto

STUDENT DATA MANAGEMENT INFORMATION SYSTEM USING THE ZACHMAN FRAMEWORK 693
Muhammad Yasin Nasrulloh, Yefry Handoko Putra

ORIENTATION RECOGNITION PERFORMANCE EVALUATION OF GT-511C3 FINGERPRINT SENSOR 699
D A Jatmiko, S U Prini

DESIGNING A GEOGRAPHICAL INFORMATION SYSTEM FOR HOUSES NOT FEASIBLE AS SUPPORTERS OF POLICY 705
B Hardiyana, JC Wibawa

THE APPLICATION OF VARIANCE-BASED STRUCTURAL EQUATION MODELING FOR PREDICTING THE INTERMEDIATION MARGIN OF ISLAMIC BANKING INDUSTRY 715
N S Kamila, D Suhartanto

EVALUATING WEBSITE REPEAT USAGE USING WEBQUAL 4.0: A GUIDE FOR E-COMMERCE BUSINESS 721
M Sutisna, A D Prayogo, I S Sarah

DESIGN OF COMMUNICATION PLANNING INFRASTRUCTURE IN IT PROJECTS COMMUNICATION MANAGEMENT 728
G T Mardiani

DEVELOP ACCOUNTING INFORMATION SYSTEMS OF SALES IN VILLAGE-OWNED ENTERPRISE 734
D W Firdaus

FORECASTING HOTEL EXPENSES USING THE ARIMA METHOD 741
T Syahromi, I D Sumitra

EVALUATION MATURITY LEVEL IT RISK MANAGEMENT OF METATRADER SOFTWARE USING RISK IT FRAMEWORK WITH DOMAIN RISK GOVERNANCE (RG) 747
R P Dhaniawaty

DEVELOPMENT OF INDEPENDENT LEARNING SYSTEM ARABIC LETTERS FOR BLIND PEOPLE 754
Syahrul, M F Wicaksono, R H I Kurniawan

MEASURING THE LEVEL OF PLAGIARISM OF THESIS USING VECTOR SPACE MODEL AND COSINE SIMILARITY METHODS 762
I Indriyanto, I D Sumitra

COMPUTER-BASED TECHNIQUES FOR PREDICTING THE FAILURE OF STUDENT STUDIES USING THE DECISION TREE METHOD 768
D Arifin, A Hadiana

DEVELOPMENT OF THE 3-DIMENSIONAL MAP IN THE BANDUNG REGENCY GOVERNMENT COMPLEX 777
H Maulana, R Andriana, H Kanai

EFFECTIVENESS OF ONLINE BASED FUNDRAISING SITES 784
J A Asyraf, S Luckyardi

USAGE OF IT ON TRADITIONAL MAGIC PRACTICE: REVIEW ON CULTURAL TRANSFORMATION 790
K Kasmana

THE IMPLEMENTATION OF DATA MINING TO ANALYZE THE CONSUMER WHICH IS DIVIDED INTO CLASS TO SUPPORT THE DECISION SUPPORT SYSTEM (DSS) IN TB. 80 MAJALENGKA 799
D. Susanti

INFORMATION TECHNOLOGY FOR JAPANESE LEARNING 808
F Febrianty, R Ricardo

APPLICATION OF ONLINE TICKET AS A METHOD IN PURCHASING BUS TICKETS 812
D S Soegotto, T Prasetyo

IMPROVEMENT OF MODEL AUTOMATIC TRACKER STRENGTH SIGNAL ANTENNA BASED ON AZIMUTH AND ELEVATION CONTROL APPROACH 819
B Herdiana, D Gunawan

WORKLOAD AND MOTIVATION ON EMPLOYEES PERFORMANCE ANALYZED BY INFORMATION TECHNOLOGY 825
I Andriana, D Riyanto, D Darmawan

EVALUATION OF USABILITY ONLINE PAYMENT WEBSITE TO AGENT SATISFACTION 830
D P Sari, I Pangaribuan

IMPLEMENTATION OF MICRO SERVICES ARCHITECTURE ON COMRADES BACKEND 836
T Suryana, A M Bachtiar, C S Budi

SIMULATION OF THE REGISTRATION SYSTEMS FOR NEW INDONESIAN COMPUTER UNIVERSITY STUDENTS AND THEIR IMPLICATIONS FOR SERVICE SYSTEMS PROCESS PERFORMANCE 842
D S Soegoto

IMPLEMENTATION OF WEB ASSEMBLY TECHNOLOGY AS VISUAL LEARNING MEDIA TO HELP HIGH SCHOOL STUDENTS IN HUMAN BODY SYSTEM LEARNING 846
R D Agustia, D R Wulan

DESIGNING PAYROLL INFORMATION SYSTEM: CASE STUDY ON CV. BANDUNG ID CARD 855
Y Soegoto

GEOGRAPHIC INFORMATION SYSTEM FOR MAPPING NEW ENTREPRENEURS IN WEST JAVA 863
D Kurniasih, A Setiyadi

MATLAB APPLICATION DEVELOPMENT OF ACCURATE DETECTION AND INSTANT SCORING SYSTEM FOR SHOOTING DRILLS 873
J Adler, G Afrialdi

SECURITY SYSTEM IMPLEMENTATION OF SAFE DEPOSIT BOX USING IRIS PATTERN BASED MATLAB 881
T Rahajoeningroem, M A Riyanto

PREDICTING STUDENT INTERESTS AGAINST LAPTOP SPECIFICATIONS THROUGH APPLICATION OF DATA MINING USING C4.5 ALGORITHMS 893
Y R Pratama, S Atin, I Afrianto

CODE DIVISION MULTIPLE ACCESS CHANNEL RESOURCES ALLOCATION WITH APPLIED TOKEN SUB-QUEUING FOR WIRELESS MULTI-SERVICE PACKET SWITCH TRAFFICS 899
S I Lestariningati, A Agusdian

REAL-TIME 2D MAPPING AND LOCALIZATION ALGORITHMS FOR MOBILE ROBOT APPLICATIONS 905
M Aria

TECHNOLOGY IN JAPANESE LANGUAGE PRIVATE 912
M S S Adi, D Albar

MOBILE PAYMENT AS FINANCIAL TRANSACTIONS IN THE DIGITAL ERA: AN EMPIRICAL ANALYSIS 918
R Marginingsih, W Widiyanti, I H Susilowati, J Retnowulan, I Soraya

TRASH CLICK DESIGN USING HOUSE OF QUALITY 926
J Robecca, AP Putra

ANALYSIS AND IMPLEMENTATION OF ONTOLOGY BASED TEXT CLASSIFICATION ON CRIMINALITY DIGITAL NEWS 931
F Rahma, D D Pangestuti, A Herdiani, N Selviandro

ENTREPRENEURSHIP & TECHNOPRENEURS

COLLABORATION OF WEB DESIGN AND E-COMMERCE AS A LOCAL PRODUCT MARKETING WEAPON 936
O Briantono, I Kurniawan

DRIVING SUCCESS OF YOUTH CREATIVE BUSINESS BASED ON ONLINE MARKET USING SOCIAL MEDIA 943
I Kurniawan, F Novyawati

THE BENEFITS OF USING BAR CHARTS IN COMPANY WEBSITES 950
K Kasmana, F M Adipraja

ELECTRONIC COMMERCE USE OF AGRICULTURE FOR CREATING A NEW BUSINESS OPPORTUNITY 956
A Alvin, B Kurniawan

TECHNOLOGY ENTREPRENEUR IN MODEST FASHION AND MICRO-ECONOMIC 964
S O Putri

E-COMMERCE IN ONLINE BUSINESS 972
R Yunanto, G A Paizal

ROLE OF MARKETPLACE ON DISTRO INDUSTRY 980
D Andriani, N H Sofviani

UTILIZATION OF E-COMMERCE IN STARTING TITLING SERVICE 987
S Supriyati, L Angelin

SUPPORTING FOOD SELF-SUFFICIENCY TO INCREASE THE ECONOMY OF THE VILLAGE 994
M Iffan, J Bastian

BENEFITS OF E-COMMERCE MARKETING FOR HANDICRAFT WAYANG GOLEK 1001
K C Mariano, I Gustiana

ANALYSIS OF RAW MATERIAL ORDERING WITH ECONOMIC ORDER QUANTITY METHOD 1008
H Irmayanti

INFORMATION TECHNOLOGY ADVERTISEMENT FOR ONLINE SHOP 1013
D Effendi, A R R Januar

E-COMMERCE MARKETING COMMUNICATION STRATEGIES ON CONSUMER BUYING INTEREST 1019
R. M. Dewi, T. Hartono

IMPORTANCE OF BUSINESS CORRESPONDENCE FOR MICRO-BUSINESS 1027
V Pratiwi, D Juniel

ANALYSIS EFFECT QUALITY OF ACCOUNTING INFORMATION SYSTEMS TO SUPPORT COMPANY PERFORMANCE 1030
D Rosa, A P Purfini

ROLE OF ONLINE BUSINESS TECHNOLOGY IN MINDSET OF STUDENTS 1036
A R Wulandari, A P Purfini

VENDING MACHINE BUSINESS AS A SOLUTION TO FEMININE HYGIENE PRODUCTS NECESSARY 1041
A S Yunita, I Pangaribuan

UTILIZATION OF INFORMATION TECHNOLOGY AS ONLINE BUSINESS MARKETING MEDIA 1047
E S Soegoto, M N Huda

HOW TO USE E-COMMERCE IN LIFE BY USING BENEFIT AND IMPACT 1055
S Wiganepdo, R Azizah

MARKETING STRATEGY USING INFORMATION TECHNOLOGY IN CONSUMER BUYING INTEREST 1060
R R Wahyuli, I Tarmawan

DEVELOPMENT OF NEW MEDIA IN MARKETING FIELD 1066
A Darmayadi, A J Rizkiawan

ROLE OF INFORMATION TECHNOLOGY IN SALE OF JERSEY 1071
R Wahdiniwaty, P P Ananta

MARKETING STRATEGY USING COLLABORATION OF INFORMATION TECHNOLOGY AND MARKET PLACE 1078
Y H Putra, I D Sumitra, D A Wahab

ASSESSING HIERARCHICAL MODEL OF WORD OF MOUTH IN SOCIAL MEDIA: ITS IMPLICATION FOR ENTREPRENEURS 1088
I S Sarah, D Suhartanto, T Suhaeni

THE INFLUENCE OF ONLINE TRANSACTION ON INCREASING THE PROFIT OF SMES USING STRUCTURAL EQUATION MODELING 1097
H S. Soegoto, Y H Putra, D A Wahab, Y Y Kerlooza, R Wahdiniwaty

FACTORS OF INFORMATION TECHNOLOGY ON BUSINESS PROGRESS 1107
M R Pratama, P Sukaesih

CUSTOMER SATISFACTION AND LOYALTY IN ISLAMIC BANKING: THE ROLE OF QUALITY, ECONOMIC, AND IMAGE 1114
A F I Manik

TARGET MARKETING STRATEGIES USING COMPUTER BASED ANALYSIS IN PROFILING POTENTIAL SCHOOL 1121
A P Purfini, R Yunanto

KNOWLEDGE MANAGEMENT MODEL FOR NURSING SERVICES OF HOSPITAL 1126
T Harihayati, U D Widianti

ENTERPRISE ARCHITECTURE FOR HIGHER EDUCATION USING ENTERPRISE ARCHITECTURE PLANNING BASED THREE PILLARS OF HIGHER EDUCATION 1132
B Indrawan, I D Sumitra

FORECASTING PRODUCT SELLING USING SINGLE EXPONENTIAL SMOOTHING AND DOUBLE EXPONENTIAL SMOOTHING METHODS 1139
F Sidqi, I D Sumitra

THE ADOPTION OF ONLINE INTERNET BANKING IN ISLAMIC BANKING INDUSTRY 1145
R S Johar, D Suhartanto

BUILDING AN ONLINE STORE FOR STUDENTS 1152
R Permana, D Albar

OPPORTUNITIES FOR SOCIAL MEDIA STUDENTS IN ONLINE BUSINESS 1157
R Dwisanty, S S Shiam

SOCIAL MEDIA OPPORTUNITIES AS A CULINARY BUSINESS 1163
R Zulfikar, A Asnawi

BENEFITS OF TECHNOLOGY FOR BUSINESS 1168
A Susan, W Novianti

BITCOIN INFLUENCE ON E-COMMERCE 1175
Adam Mukharil, Rani Nur Hanifah

E-BROCHURE AS A COMMUNICATION STRATEGY IN ENTREPRENEURSHIP 1180
D S Soegotto, A O Istiqomah

INFORMATION TECHNOLOGY IN SUPPORTING EDUCATION WORLD TO BECOME AN ENTREPRENEUR 1184
B J Sihite, Asih Prihandini

MARKETING STRATEGY THROUGH SOCIAL MEDIA 1190
E S Soegoto, A T Utomo

DEVELOPMENT OF E-COMMERCE IN SMARTPHONE SALES 1197
B Kurniawan, R Riyanto

PATRIARCHY AS A BARRIER TO WOMEN ENTREPRENEURS IN INDONESIA 1202
R Wahdiniwaty, D A Rustam

EFFECT OF E-BUSINESS ON UNEMPLOYEMENT IN INDONESIA 1206
M D Putri, N Rikma Dewi

RELATIONSHIP BETWEEN ONLINE SHOPPING SITE ADS WITH BUYING AND SELLING INTERESTS ON ONLINE SHOPPING SITES 1213
M Maryati, M Erika

ADVANTAGE E-COMMERCE TECHNOLOGY IN ORNAMENTAL PLANT BUSINESS 1218
H Hasanah, R A Tirtana

ANALYSIS OF BENEFITS FROM INFORMATION TECHNOLOGY AS A CREATIVE MARKETING STRATEGIES 1225
W A Astuti, A P Dewi

COIN LOCKERS AS A TECHNOLOGY-BASED PUBLIC FACILITY 1231
N Raihanah, R F Syafariani

INFLUENCE OF ONLINE STORE ON PUBLIC ENTHUSIASM ON JAPANESE ANIME CULTURE MERCHANDISE 1237
Y Narulita, I Gustiana

THE ROLE OF TECHNOLOGY IN THE CULINARY BUSINESS 1241
P S Kurniati, R Anggraeni

ANALYSIS E-COMMERCE HANDICRAFT OF WEBSITE-BASED 1248
L Warlina, I Habibi

BUSINESS E-COMMERCE STRATEGY TO INCREASING PROFITS 1253
M Aria, S P Fajriansyah

BUILDING A BUSINESS USING E-COMMERCE TECHNOLOGY 1259
W Fibriyanti, D Kurniasih

ROLE OF INFORMATION TECHNOLOGY ON ENTREPRENEURSHIP 1267
T Tawami, A Rahman

BIG DATA IMPACT IN DEVELOPMENT E-COMMERCE 1272
Y Sutisnawati, W K Maulani

PART 3

E-MARKETING OF COFFEE PRODUCTS 1278
P Fahmi, D Effendi

ACCOUNTING APPLICATION FOR SMALL MEDIUM ENTERPRISES 1284
E Suhayati, I Riandani

DEVELOPMENT OF ENTREPRENEURIAL CHARACTERISTICS AND A GOOD BUSINESS SYSTEM IN RURAL COMMUNITIES USING INFORMATION TECHNOLOGY 1292
E Suhayati, A Rudiana

MARKETING COMMUNICATION STRATEGY WITH E-COMMERCE 1297
S K Rahayu, F N Fatima

UTILIZATION OF TECHNOLOGY IN ONLINE BUSINESSES COLLEGE STUDENTS 1303
B Kurniawan, N M Gunawan

ELECTRONIC PAYMENT FOR MICRO, SMALL AND MEDIUM ENTERPRISES IN DEVELOPING COUNTRIES 1309
L Puspitawati, P Gurning

MARKETING STRATEGY SALES OF GOODS AND SERVICES USING INFORMATION TECHNOLOGY 1317
M F Fadhilah, S I Praja

MARKETING SERVICES IN THE FIELD OF PHOTOGRAPHY AND VIDEOGRAPHY USING INFORMATION TECHNOLOGY 1322
F B Satia, D A Wahab

E-COMMERCE RISK DURING TRANSACTION PROCESS 1327
S Sahara, P S Kurniati

REALITY ROLE OF LANGUAGE IMPROVING E-COMMERCE 1333
S.M Setiana, D Maysarah

THE INFLUENCE OF E-COMMERCE INFORMATION SYSTEM ON LOCAL PRODUCT COMPANIES 1337
TA Wulandari, YI Nugraha

INFLUENCE OF VIRTUAL MONEY ON THE RUPIAH CURRENCY 1344
M F K Fadilla, N Heriyati

ECO-FRIENDLY CATERING BUSINESS FOR THIS ERA 1350
L Rahmawati, S H Mayawati

MARKETING COMMUNICATION OF BEAUTY PRODUCTS USING INFORMATION TECHNOLOGY 1358
I R Almira, R D Nazhar

BUILDING SPORTS EQUIPMENT AMONG STUDENTS THROUGH MEDIA AS A TREND 1365
Y O Prihatini, T Hidayatullah

THE EFFECT OF CORPORATE RISK DISCLOSURE TOWARD FIRM VALUE IN INDONESIA SHARIA STOCK INDEX 1371
M D F Abdullah

ARCHITECTURE, URBAN & REGIONAL PLANNING, & CIVIL ENGINEERING

FIRE SAFETY SYSTEM BUILDING 1377
P K Mahbub, C Darmawan

COMPARISON OF FORECASTING THE NUMBER OF OUTPATIENTS VISITORS BASED ON NAÏVE METHOD AND EXPONENTIAL SMOOTHING 1383
I Basri K, I D Sumitra

COMPARISON OF CLASSIFICATION METHODS ON SENTIMENT ANALYSIS OF POLITICAL FIGURE ELECTABILITY BASED ON PUBLIC COMMENTS ON ONLINE NEWS MEDIA SITES 1388
K Sigit, A P Dewi, G Windu, Nurmalasari, T Muhamad, N Kadinar

SIMULATION OF FIRST LEVEL HEALTH CARE FACILITIES TO REDUCE PATIENT FLOW TIME 1400
A Santosa, M Sagathi, M R Situmorang

THE FACTORS THAT AFFECT COLLECTIVE ACTION OF FARMER'S ORGANIZATIONS IN RURAL AREA 1405
S A Aulia, T F Sofhani

A SURVEY OF SELF-DRIVING URBAN VEHICLES DEVELOPMENT 1416
M Aria

APARTMENT DESIGN FOR SYNERGIZING THE REGION TO CREATE SHARED ECONOMIC IDENTITY AND EXPECTATIONS 1422
L Ismawati, F Faturahman

MAMDANI FUZZY INFERENCE SYSTEM USING THREE PARAMETERS FOR FLOOD DISASTER FORECASTING IN BANDUNG REGION 1430
I D Sumitra, S Supatmi

FLOOD CONTROL STUDY USING 1D/2D NUMERICAL MODEL IN CIPABUARAN CHANNEL, SABI RIVER WATERSHED, TANGERANG CITY 1439
V Pratiwi, B P Yakti, A Rizaldi, I R Moe, D P Koesrindartono

URBAN AIR POLLUTION MONITORING SYSTEM FOR MAPPING AREAS BASED ON POLLUTANT LEVEL 1449
M Agus, S S Iqbal

PURA AS A FORTRESS IN BALINESE RELIGIOUS TRADITIONAL ARCHITECTURE BUILDING 1459
S P Martana

INFORMATION SYSTEM ARCHITECTURE PLANNING WITH THE OPEN GROUP ARCHITECTURE FRAMEWORK 1467
R A Nugraha, Y Handoko

DESIGNING ENTERPRISE ARCHITECTURE FOR SPORTS INFORMATION SYSTEM PLATFORM USING THE OPEN GROUP ARCHITECTURE FRAMEWORK ARCHITECTURE DEVELOPMENT METHOD 1476
I Saepurrahman, I D Sumitra

SYSTEM PERFORMANCE MEASUREMENT USING WEB SERVER LOG FILES METHOD AND SINK'S SEVEN PERFORMANCE CRITERIA IN MULTICHANNEL SYSTEM ARCHITECTURE 1482
R Asrianto, Y Kerlooza

KNOWLEDGE MANAGEMENT SYSTEM ARCHITECTURE DESIGN 1492
G C Pamuji, A Hadiana, R Lubis

AGRICULTURAL LAND USE CHANGE INTO TOURISM AREA IN LEMBANG SUB-DISTRICT, WEST BANDUNG REGENCY, WEST JAVA PROVINCE, INDONESIA 1499
L Warlina, R Guntara

DESIGNING AUTHORIZATION PROCEDURES FOR MULTI-CHANNEL AND PUBLIC PARTICIPATION-BASED SYSTEM ARCHITECTURE FOR CIVIL REGISTRATION AND POPULATION DATA 1506
A Setiawan, YY Kerlooza

ENTERPRISE ARCHITECTURE MODEL USING ENTERPRISE ARCHITECTURE PLANNING FOR SERVICES IN NATIONAL LAND AGENCY 1513
A Samsudin, A Hadiana

INVISIBLE IN ARCHITECTURE CONFRONT THE GREEN ARCHITECTURE 1520
W S Abioso

PRE-FABRICATED MATERIAL FOR MODULAR HOUSE 1526
C Dharmawan, M Alviano

DESIGNING ENTERPRISE ARCHITECTURE USING TOGAF ARCHITECTURE DEVELOPMENT METHOD 1532
R A Hermawan, I D Sumitra

ELECTRONIC ARCHITECTURE PLANNING IN INDONESIAN TRADE (INATRADE) PORTAL 1540
A Chotib

DEVELOPMENT OF SMART ENVIRONMENT SYSTEMS MODEL FOR THE OPTIMIZATION OF AGRICULTURE PRODUCTS 1548
A Finandhita, H Maulana

SOLAR HOUSE SYSTEM ADOPTION AMONG RURAL COMMUNITY 1555
L Nabilah S, Z A C Loveldy, S S Prayoga, D Suhartanto

DESIGNING ENTERPRISE ARCHITECTURE FOR MARKETING ADVERTISING MEDIA SYSTEM BASED ON TOGAF ARCHITECTURE DEVELOPMENT METHOD 1563
N A Pratama, I D Sumitra

DESIGNING OF ENTERPRISE ARCHITECTURE FOR INTERIOR FURNITURE PRODUCTION BASED ON TOGAF 9.1 1571
L Azizi, I D Sumitra

ROLE OF TECHNOLOGY FOR INTERIOR DESIGN SECTORS IN CREATIVE ECONOMIC DEVELOPMENT 1579
N Hasti, G Kusnia

SERVICE-ORIENTED ARCHITECTURE FOR E-MARKETPLACE MODEL BASED ON MULTI-PLATFORM DISTRIBUTED SYSTEM 1584
Yaddarabullah, M F Muttaqin, M Rafiansyah

APPRAISING THE BALANCE OF BUILDING FACADE OVER THE PROPORTION THEORY 1592
D Dewiyanti, S O Sari

THE RELATIONSHIPS BETWEEN THE CHARACTERISTICS OF PEDESTRIAN AND THE INCREASE OF FACILITATION OF SIDEWALK 1600
T W Natalia, T Rohmawati

ELECTRICAL & COMPUTER ENGINEERING

VENDING MACHINE AND INFLUENCE ON LIFE IN INDONESIA 1608
S Mulyani, R Hartono

THE FORM OF HIGH-PERFORMANCE COMPUTING: A SURVEY 1613
Priati Assiroj, H L H S Warnars, R Kosala, B Ranti, S Supangat, A I Kistijantoro, E Abdurrachman

RELEVANCE VECTOR MACHINE OPTIMIZATION IN AUTOMATIC TEXT SUMMARIZATION 1622
K E Dewi, E Rainarli

SCALE INVARIANT FEATURE TRANSFORM DESCRIPTOR ROBUSTNESS ANALYSIS TO BRIGHTNESS CHANGES OF ROBOWAITER VISION SENSOR SYSTEM 1627
T N Nizar, S Supatmi, E P Putro

THE EFFECT OF OVERLAP RATIO AND SILICON CARBIDE WHEEL GRINDER ON VIBRATION AMPLITUDE AND SURFACE ROUGHNESS FOR MATERIAL OCR12VM. 1633
F C Putra, Suhardjono, Sampurno

MULTI SENSORS APPLICATION FOR AUTOMATIC PORTAL ACCESS IN RESIDENTIAL COMPLEXES 1640
S Sutono, S L BR Ginting, M F Wicaksono, K R Tembo

CARGO VEHICLE MONITORING WITH RENEWABLE ENERGY AND GEOFENCING FOR LANE RESTRICTIONS 1646
M F Wicaksono, Syahrul, Sutono, M D Rahmatya

MEASURING DETECTION OF SIGNATURE ON ENTERPRISE COMPUTER NETWORK..... 1655
S Alviana, I D Sumitra

COMPUTERIZED OF INTERNATIONAL FINANCIAL REPORT STANDARD FOR GOOD GOVERNANCE IN SMALL MEDIUM ENTERPRESES 1660
Supriyati, R S Bahri, E Komarudin

CONVOLUTION NEURAL NETWORK FOR TEXT MINING AND NATURAL LANGUAGE PROCESSING..... 1666
N I Widiastuti

KEYWORDS RECOMMENDER FOR SCIENTIFIC PAPERS USING SEMANTIC RELATEDNESS AND ASSOCIATIVE NEURAL NETWORK..... 1671
F Nugroho, I D Sumitra

INTEGRATION OF PASSIVE INFRARED SENSOR WITH CLOSED-CIRCUIT TELEVISION..... 1676
M Ilmi

ANALYSIS OF INTRUSION DETECTION SYSTEM PERFORMANCE FOR THE PORT SCAN ATTACK DETECTOR, PORTSENTRY, AND SURICATA 1683
T Ernawati, M F Fachrozi, D D Syaputri

FUZZY ANALYTIC HIERARCHY PROCESS METHOD FOR SELECTING THE BEST DESIGN CONCEPT OF CORN SHELLING MACHINE 1694
G Sianturi, T Wijaya

ANALYSIS OF MOVEMENT DETECTION APPLICATIONS IN PREGNANT WOMAN USING BODY MECHANIC AND SENSORS ON ANDROID DEVICES..... 1701
E W F Haikal

COMPARISON OF DOCUMENT SIMILARITY MEASUREMENTS IN SCIENTIFIC WRITING USING JARO-WINKLER DISTANCE METHOD AND PARAGRAPH VECTOR METHOD..... 1708
S C Cahyono

PROSTHETIC ARM CONTROLLER BASED ON BRAINWAVES SPECTRUM EEG SENSOR 1717
J Utama, G Palada

POSITIONING ACCURACY OF COMMERCIAL BLUETOOTH LOW ENERGY BEACON 1725
M Fachri, A Khumaidi

THE COMPARISON OF MACHINE LEARNING MODEL TO PREDICT BANKRUPTCY: INDONESIAN STOCK EXCHANGE DATA..... 1729
E Rainarli

SCIENCE

SYNTHESIS AND CHARACTERIZATION OF ZNO NANOPARTICLES BY USING GELATIN AS CO-TEMPLATE 1735
Maria Ulfa Mega, S.K Yuni Irwanti, S Teguh Endah

BEHAVIOR OF CONCRETE BURNED WITH HIGH TEMPERATURE 1742
Y D Setiyarto, H Y Fira

DATABASE MIGRATION STRATEGIES AND TECHNIQUES TO MINIMIZE UNEXPECTED DYSFUNCTIONALITY 1748
A Fahmi, Y H Putra

IRONY SENTENCE DETECTION TECHNIQUES USING FUZZY HISTORICAL CLASSIFIER 1755
A Erfina, Y H Putra

SUSTAINABLE GREEN CHEMICAL PROCESSING OF SURFACTANT SYNTHESIZED FROM BAGASSE FOR ENHANCED OIL RECOVERY USING MICROWAVE RADIATION 1761
R Setiati, S Siregar, T Marhaendrajana, D Wahyuningrum, A Listyani

PROBABILITY ANALYSIS OF COFFEE SALES USING MARKOV THEORY 1768
I M A Anthara, E Salim

POVERTY LINE FORECASTING MODEL USING DOUBLE EXPONENTIAL SMOOTHING HOLT'S METHOD 1773
R Aminudin, Y H Putra

ANALYSIS QUALITY CONTROL OF CARDED AND COMBED YARNS USING SIX SIGMA METHOD 1780
H Henny, N Agnia, H Hardianto

ACCOUNTING SCIENCE WITH TECHNOLOGICAL DEVELOPMENT 1788
H D Yulianto, O Pratiwi

DETERMINING THE BEST LOCATION OF CASH RECYCLE MACHINE USING SIMPLE ADDITIVE WEIGHTING METHOD 1794
D Herdiana

TACKLING IMBALANCED CLASS ON CROSS-PROJECT DEFECT PREDICTION USING ENSEMBLE SMOTE 1803
A Saifudin, S W H L Hendric, B Soewito, F L Gaol, E Abdurachman, Y Heryadi

ENSEMBLE UNDERSAMPLING TO HANDLE UNBALANCED CLASS ON CROSS-PROJECT DEFECT PREDICTION 1813
A Saifudin, Y Heryadi, Lukas

K-MEANS AND K-MEDOIDS FOR INDONESIAN TEXT SUMMARIZATION 1820
K K Purnamasari

ASSESSING THE PROFITABILITY OF ISLAMIC BANKS: THE ROLE OF BANK AGE AND BANK PERFORMANCE 1826
N Haryati, D I Burhany, D Suhartanto

GRAVITY-DRIVEN AGENT-BASED MODEL FOR SIMULATION OF ECONOMIC GROWTH A POINT ALONG A HIGHWAY 1832
T Suheri, S Viridi

COMPUTER SCIENCE AND PHILOSOPHY: IN SEARCH OF A NEXUS 1840
U M Ishaaq

DATA VISUALIZATION OF PLANT RESISTANT TOWARDS PLANT DISEASE AT PT. EAST-WEST SEED INDONESIA 1846
D Dharmayanti, A M Bachtiar, M A D Santoso

EVALUATING THE PERFORMANCE EMPLOYEE USING TOPSIS 1858
M Lingga

THE EFFECT OF CONSUMER INTEREST ON ISLAMIC BANK AND CONVENTIONAL BANK MOBILE BANKING: AN ANALYSIS USING GOOGLE TRENDS 1866
Asep Rahmat Sudrajat, Sumiyati

INDUSTRIAL ENGINEERING

DETERMINANTS OF ISLAMIC BANK PERFORMANCE: EVIDENCE FROM INDONESIAN ISLAMIC BANKING INDUSTRY 1872
D S Insani, M Muflih

DIGITAL BRANCH: BANKING INNOVATION IN INDONESIA TO FACE 4.0 INDUSTRY CHALLENGES 1877
A Riyanto, I Primiana, Yunizar, Y Azis

E-SUPPLY CHAIN MANAGEMENT MODEL FOR GARMENT & TEXTILE INDUSTRY WITH LIMITATION OF TECHNOLOGICAL CAPABILITIES 1884
P N Sabrina, A Maspupah, F R Umbara

E-CREATIVE INDUSTRY BASED ON JAPANESE CULTURE 1893
A S Sitanggang, M R Akbar

E-CREATIVE INDUSTRY BASED ON JAPANESE FOOD 1901
T Tawami, P T Sopyana

ANALYSIS OF REGRESSION ALGORITHM TO PREDICT ADMINISTRATION, PRODUCTION, AND DELIVERY TO ACCURACY OF DELIVERY OF PRODUCTS IN COSMETIC INDUSTRY 1907
W Gata, H B Novitasari, R Nurfalah, R Hernawati, M J Shidiq

EXPERIENCE QUALITY AND VALUE: AN ASSESSMENT IN THE CREATIVE TOURISM INDUSTRY 1914
D Suhartanto, N Wibisono, L Nabilah S, R Agustina, Z A C Loveldy

MODEL OF SUPPLY CHAIN MANAGEMENT FOR FOOD PRODUCT INDUSTRY COMPANIES 1921
U D Widianty, T Harihayati

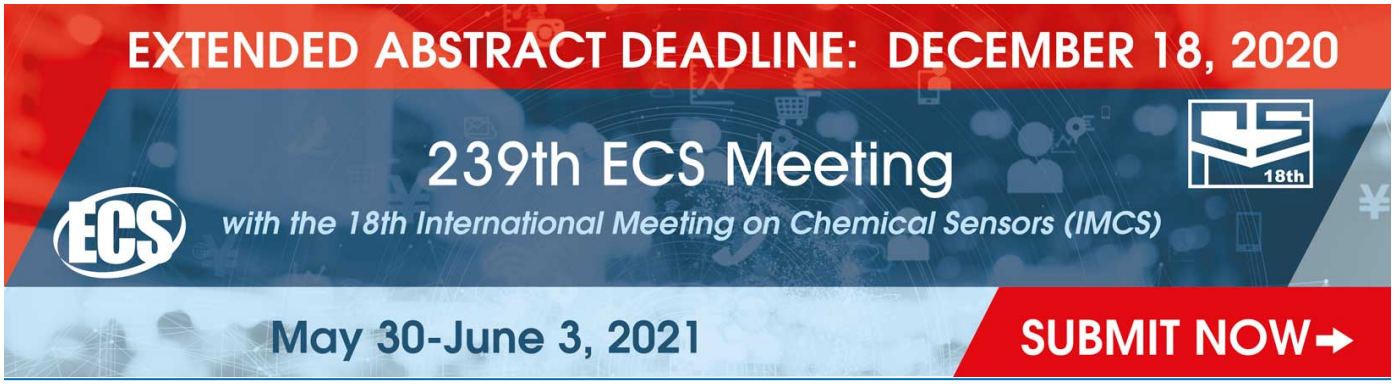
Author Index

PAPER • **OPEN ACCESS**

Computer Science and Philosophy: In Search of a Nexus

To cite this article: U M Ishaaq 2019 *IOP Conf. Ser.: Mater. Sci. Eng.* **662** 062016

View the article online for updates and enhancements.



This content was downloaded from IP address 103.112.189.13 on 18/12/2020 at 01:08

IOP Conf. Series: Materials Science and Engineering **662** (2019) 062016 doi:10.1088/1757-899X/662/6/062016

Computer Science and Philosophy: In Search of a Nexus

U M Ishaaq
Departemen Teknik Komputer, Universitas Komputer Indonesia, Indonesia

Email: ishacovic@gmail.com

Abstract. This research aims to map and analyse the nexus between philosophy and computer science: ontological and epistemological, as well as axiological aspects. It is arguably known traditionally that philosophy is regarded as the mother of all rational sciences; However, there has been little hitherto discussion about the connections between the two. On the other side, philosophy is systematic inquiry into human mind and behaviour as well in order to give the meaning in every object of study. For computer scientists, understanding the nexus between philosophy and computer science will advance the ability to think through the consequences of novel ideas and widen the perspective. This study used preliminary bibliographic study using literature research methods, which carried out by investigating various interdisciplinary studies, especially computer science and information technology in terms of philosophy and its branches. The results reveal that there are strong connection between these two disciplines, mainly in ontological, epistemological and axiological aspects. On axiological and ethical aspect, the link is very important, and philosophy has potential role in ethical problem solving that arise from within the academic discipline of computer science.

1. Introduction

Today, philosophy and computer science and information technology are regarded as two separate or even unrelated disciplines, but the recent trend in the development of computer science and information technology increasingly requires a philosophical foundation, especially in ethical aspects and law such as piracy, sharing, hacking, data pricacy, and many more. The connection between the two is not limited only in ethical and law aspect, but also in broader aspects of philosophy. This paper tries to map and analyse the nexus between philosophy and computer science. Aristotle, who is known as the father of the science of logic, from the beginning aspired to make a rule of thought that produces valid and objective conclusions, regardless of human subjectivity. This set of rules is called syllogism, a method or valid thinking algorithm, as a computer requires a certain algorithm to produce the correct calculation results. Alan Turing is considered one of the main pioneers in the history of the development of modern computer science. It is interesting how he in his paper "Computing Machinery and Intelligence", started with a question and philosophical dialectics: "I propose to consider the question," Can machines think? " This should begin with definitions of the terms "machine" and "think". Furthermore, Turing tried to maintain his belief that a machine could think and compete with humans in logical-rational searches. For the possibility of a theological objection, that something that thinks must have a soul. Likewise, he tries to answer mathematical objections, the objection argument that thinking requires awareness, etc. This philosophical-theoretical dialectic has become one of the rationale in the development of subsequent computer science and technology.

Although Alan Turing is not known as a philosopher, this shows that philosophical matters cannot be separated from the revolution and development of computer science. Boolean logic and algebra which is a very important mathematical device in computer science were pioneered and formulated by a celebrated logician, mathematician, and philosopher named George Boole. Boolean algebra cannot be

Content from this work may be used under the terms of the Creative Commons Attribution 3.0 licence. Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.
Published under licence by IOP Publishing Ltd

separated from the tradition of Aristotelian logic. From this, it is very clear that the development of computer science cannot be separated from the underlying philosophical thinking. Moreover, the rapid development of computer science and information technology increasingly requires philosophical views, especially those concerning the ethical and legal aspects. It is no exaggeration to have a higher education institution that offers computer science and philosophy study programs like those of Oxford University. However, investigations that map the relationship between the two disciplines of science are still lacking, therefore, this preliminary study aims to map in general but comprehensive the link between philosophy and computer science. In general, philosophy is traditionally divided into three main branches namely: metaphysics which includes ontology, epistemology, and axiology. In addition to these three branches logic is also sometimes included in a branch of philosophy, and is regarded as a primary tool for understanding philosophy as a whole. This study tries to review and map out the possibilities of the relationship between each branch of philosophy and computer science, including information technology.

This research aims to map and analyse the nexus between philosophy and computer science: ontological and epistemological, as well as axiological aspects. This study is a preliminary bibliographic study using literature research methods, which is carried out by investigating various interdisciplinary studies, especially computer science and information technology in terms of philosophy and its branches. After a review of the literature, we will map the nexus of discipline in these four aspects of philosophy, namely: ontology, epistemology, axiology and logic, and the possibility of future research development.

2. Method

This study is a preliminary bibliographic study using literature research methods, which is carried out by investigating various interdisciplinary studies, especially computer science and information technology in terms of philosophy and its branches. After a review of the literature, we will map the nexus of discipline in these four aspects of philosophy, namely: ontology, epistemology, axiology and logic, and the possibility of future research development. Teaching philosophy through technology. References collected are scientific papers in the computer science and informatics relating to key philosophical words such as axiology, epistemology, ethics, ontology, metaphysics, and philosophy itself. Also refers to the earliest works of pioneering scholars of computer science to see the background of the birth of computer science.

3. Results and Discussion

Ontology, as generally understood, is defined as the theory of 'being', the study of what is considered 'there', while epistemology is a branch of philosophy which investigates the origin, structure, methods and validity of knowledge; where axiology is the study on values, ethics and aesthetics.

The study of the relationship of ontology with computer science has begun for example starting in the field of Artificial Intelligent and then developing now in semantic web or web 3.0. Anthology defines as: "The term (ontology, -from author) is borrowed from philosophy, where Ontology is a systematic account of Existence. For AI systems, what "exists" is that which can be represented ... Thus, in the context of AI, we can describe the ontology of a program by defining a set of representational terms. In such an ontology, definitions associate the names of entities in the universe of discourse (e.g. classes, relations, functions, or other objects) ... "[7,8]. In the semantic web, computers are expected to understand human language and thoughts and understand communication between computers. Therefore the computer must understand the meaning of the word (semantic) and the sentence structure (syntax) of human language when it identifies a collection of words. Computers must understand the subject, predicate, and object of a sentence. Therefore, ontology in the semantic web is a set of definitions that connect terms used as subjects and objects with their predicates of vocabulary. But the study of the connection of ontology with computer science lies deeper, namely the answer to “what is called information” ontologically? Where is the information in the dual mind "mind and body" in the discourse of Western philosophy? A study of this has been done for example by Boersema. According to

Boersema, information is not included in the mental-physical ontological division known in Western philosophy, but it is a third type of ontology that is between the two.

The study of epistemological relations with computer science can be viewed from two sides: Firstly, how computer science influences philosophy; Secondly, how philosophy is used in the study of computer science. The former, for example, was carried out by Bynum and Moore. They studied how computer technology had influenced philosophy and philosophers in modern times. This influence is first, on the way they communicate and work in everyday life, in writing their works and discussing remotely with their colleagues on philosophical topics, on the way they seek scientific references, the way they look social, political and cultural symptoms not only through books or directly but also digitally through social media. Second, the influence of computers on their thinking. How computers have helped them think and analyze. Third, is the aspect of ethics, namely how they are faced with the challenge of validity and the truth of the information they receive due to a flood of information digitally. Studies of computer use in science have also been studied, for example by Segura. According to him, the use of computers has epistemological influences in science. Terms that have been used for a long time such as 'model ', 'uncertainty', 'logic', 'learning' or 'proof' have experienced a shift in meaning with the existence of computer technology. At present, it is not only humans who produce science but humans + machines are producers of science, so a new epistemology is needed called "computational epistemology", which is defined as: "the computational processes implied or required to achieve human knowledge.". Segura proposed a scientific method improvement in scientific activities which he called Integrative Approach to Computation (IAC). McCarthy has studied philosophical relationships with AI, he saw that both had similarities and also problems. How can the facts obtained in the real world be represented in the memory of a computer, and what rules are needed to guarantee the validity of the results obtained from these facts? In addition, the issue of simulating using computers is also an epistemological study, for example a study conducted by Greca et al. McCarthy concludes that: "Philosophy has more direct relation to artificial intelligence than it has to other sciences.". In his paper Greca et al. tried to review how the issues that emerged from the philosophy of science on the use of computers as a simulation in science. As for the later, namely from the epistemology side as a tool for computer science or the study of philosophical influences in the study of computer science, for example on fundamental epistemological questions such as "what is the meaning of knowing computer science?". Does it need a single answer or is it based on a variety of backgrounds? Like gender, profession, age, etc. These include questions about what the true meaning of computer science itself is. The next question arises. This is because computer science is a relatively new discipline, namely where is the position of computer science? Is he a branch of mathematics, natural sciences, or technique? Studies like this have been carried out by Eden. The epistemological study of computer science is also widespread in pedagogical areas, because if you take John Dewey's view that teaching and learning are "the spectator view of knowledge," the success of information transmission becomes very valuable. Then what is the position of the internet as a carrier of information in this pedagogical process? Brey considers that computers are ontological and epistemic devices at the same time because they function as cognitive devices that expand and assist human cognitive functions. In science, the use of computer aids distinguishes two types of epistemological science, namely computer-assisted science and computer-assisted science. Primiero terms the assisted science as a Software-intensive science (SIS). This epistemic difference raises several philosophical issues from the design of algorithms and minning data that are used against computer error calculation results and trust in results obtained from calculations using computers, and the relationship between scientific statements and codes used in computational models .

Ethical issues in the development of computer science and information technology or information and computer ethics (ICE) have actually been included in various educational curricula since around 1970, but it is increasingly prevalent lately. This is because the rapid development of information technology and computers has an ethical impact on humanity which is not followed by a review of the philosophy of information technology and the computers that accompany it. Luciano Floridi is among several researchers who are active in conducting research, lectures, seminars, and publications that are much related to these issues. In 2010, Floridi and several authors published The Cambridge Handbook of Information and Computer Ethics published by Cambridge University Press. This booklet contains

various results of studies of researchers on ethical issues that develop along with the development of computer science and information technology, including discussions about values in computer technology, information ethics, ethical issues in the information society, copyright, information security, ethical issues in Artificial Intelligence, Metaethics, etc. Aspects relating to ethical issues include: privacy and anonymity, accuracy, intellectual property and access which are abbreviated as PAPA; Also issues of availability, accessibility and accuracy of information are referred to as 'the triple A'; Also other issues concerning copyright, the flood of information called infoglut, issues of plagiarism, security, truth and validity of information, digital vandalism, propaganda, the spread of hoaxes, and others.

In the field of logic, the connection between philosophy and computer science has indeed happened since the very beginning. Boolean logic and algebra are the most important cornerstones of computer science currently included in Discrete Mathematics. Even logic is called "the calculus of computer science". It can be said that the birth of computer science is due to the question of whether the problem of predictive logic can be solved by a device mechanically called later as a Turing machine. The influence of logic in computer science has been investigated by Joseph Y. Halpern et. al., who examined how logic can be very effective in playing a role in computer science. The study of the Gray-Code calculation logic or also called reflected-binary-code which is very important in sensor readings has also been done for example by Ulrich Berger et al. Research logic in computer science includes fields of databases; hardware; algorithm correctness and optimization; topics in Artificial Intelligence such as modeling and verification of digital systems, knowledge representation, etc. Also studies of the "conceptual logic" of information as the logic of design are distinguished from "informal logic" and "philosophical logic" as other branches of philosophy. Conceptual logic is the logic in designing a system consisting of parts that have specific tasks: how the mechanism, its arrangement, and the relationship of one part to another.

The extensive relationship between computer science and almost all parts of philosophy shows the importance of mapping the area of research on philosophy and computer science and information technology. Philosophy of Artificial Intelligence (AI); Philosophy of Computation and Information, in the field of epistemology, for example Epistemology of Computation, Philosophy of Mind, e.g. virtual reality, computational models of reasoning, neural representation; in the field of axiology which includes Ethics and Aesthetics for example: privacy, intellectual property, ethical constraints on human-machine interaction and robotics systems etc.; in the Logic field for example. automated reasoning systems and logics, logic programming and representation; In aspects of ontology and metaphysics such as: digital or information ontology. This relationship can also include Philosophy of Language such as natural language processing (NLP), and others. The breadth of the research area shows the urgency of the offering a study programme on philosophy, computer science and information technology in higher education, especially in the case of higher education in Indonesia. For example, there are 55 computer science study programme offered by various universities in Indonesia, 60 in informatics engineering, informatics management and its varieties, however none of which are offering philosophy and computer science-informatics interdiciplinary study or research programme.

4. Conclusion

The nexus between philosophy and computer science is obvious and broad in almost every major part of philosophy; namely ontology, epistemology and axiology, as well as in logic. In fact it can be said that philosophy is a discipline that has a direct connection with computer science. Philosophical studies of computer science and information technology are therefore very important, besides in the ontological and epithemological aspects, also especially in axiological aspects such as ethics and aesthetics that are very necessary today. Furthermore, more educational institutions are needed to offer philosophical, computer science and information technology study programs in the near future.

References

[1] Arkoudas, K., and Musser, D. (2017). *Fundamental Proof Methods in Computer Science.* Cambridge Massachusetts: The MIT Press.

[2] Berger, U., Miyamoto, K., Schwichtenberg, H., and Tsuiki, H. (2016). Logic for Gray-code Computation. In *Concepts of Proof in Mathematics, Philosophy, and Computer Science* **12**(2)(pp. 69-110). De Guyter.

[3] Björkman, C., and Trojer, L. (2006). What does it mean to Know Computer Science? Perspectives from Gender Research. *tripleC, **4***(2), 316-327.

[4] Boersema, D. (2002). The Internet, Epistemology and Ontology. . *Interface: The Journal of Education, Community and Values, **2***(7).

[5] Boole, G. (1997). *George Boole Selected Manuscripts on Logic and its Philosophy.* Basel: Springer Basel AG, **4**(1)

[6] Brey, P. (2005). The Epistemology and Ontology of Human–Computer Interaction. *Minds and Machines , **15***, 383–398.

[7] Bynum, T. W. (1998). *The digital phoenix. How computers are changing philosophy.* Oxford, UK.: Blackwell, **2**(1)

[8] Doyle, T. (2013). CCTV and Public Anonymity. *Proceedings of the 2013 Meeting of the International Association for Computing and Philosophy* . Maryland, **12**(6).

[9] Eden, A. H. (2007). Three Paradigms of Computer Science. *Minds and Machines, **17***(2), 135—167.

[10] Floridi (ed.), L. (2010). *The Cambridge Handbook of Information and Computer Ethics.* Cambridge: Cambridge University Press, **12**(8).

[11] Floridi, L. (2017). The Logic of Design as a Conceptual Logic of Information. *Minds and Machines, **27***(3), 495–519.

[12] Greca, I. M., Seoane, E., and Arriassecq, I. (2014). Epistemological Issues Concerning Computer Simulations in Science and Their Implications for Science Education. *Sci and Educ, **23***, 897–921.

[13] Gruber, T. R. (1993). A Translation approach to portable ontology spesification. *Knowledge Acquisition, **5***, 199-220.

[14] Gruber, T. R. (1995). Towrd Principles for the design of ontologies used for knowledge sharing. *Int. J. Human-Computer Studies, **43***, 907-928.

[15] Halpern, J. Y., Harper, R., Immerman, N., Kolaitis, P. G., Vardi, M. Y., and Vianu, V. (2001). On the Unusual Effectiveness of Logic in Computer Science. *The Bulletin of Symbolic Logic, **7***(2), 213-236.

[16] Halpern, J. Y., Harper, R., Immerman, N., Kolaitis, P. G., Vardi, M. Y., and Vianu., V. (2001). On the unusual effectiveness of logic in computer science. *Bulletin of Symbolic Logic, **7***, 213–236.

[17] Kemenristek. (2018). *PANGKALAN DATA PENDIDIKAN TINGGI* . (Ristekdikti) Retrieved March Friday, 2019, from https://forlap.ristekdikti.go.id/prodi/

[18] Lee, D. S. (1966). Ultimacy And The Philosophic Field. In *Metaphysics and Belief* (pp. 71-102). New Orleans: Tulane University, **2**(12).

[19] Manna, Z., and Waldinger., R. (1985). *The Logical Basis for Computer Programming.* Reading: Addison-Wesley, **12**(6).

[20] McCarthy, J. (1977). Epistemological Problems of Artificial Intelligence. *Proceedings of the 5th international joint conference on Artificial intelligence*, **12**, (pp. 459—465). Cambridge.

[21] Colburn, T. (2015). Philosophy and computer science. Routledge.

[22] Primiero, G. (2014). On the Ontology of the Computing Process and the Epistemology of the Computed. *Philosophy and Technology, **27***, 485–489.

[23] Runes, D. D. (1942). *The Dictionary of Philosophy.* New York: Philosophical Library, Inc.

Segura, J. V. (2009). Computational Epistemology and e-Science: A New Way of Thinking. *Minds and Machines, **19***, 557–567.

[24] Terje Aaberge, S. N. (2007). The Semantic Web in a philosophical perspective. **12**, *30th International Wittgenstein Symposium.* Wechsel.

[25] Turing, A. (1950, October). Computing Machinery and Intelligence. *Mind, **59***, 433-460.
[26] Wolenski, J. (2004). The History of Epistemology. In *Handbook of Epistemology* **23** (pp. 3-56). Dordrecht: Springer Science+Business Media.

Usep Mohamad Ishaq <usep.mohamad.ishaq@email.unikom.ac.id>

Notification of Review Result

2 messages

INCITEST UNIKOM <incitest@email.unikom.ac.id> Fri, Mar 29, 2019 at 4:45 PM
To: usep.mohamad.ishaq@email.unikom.ac.id, dedi@unikom.ac.id, richi@email.unikom.ac.id, dewi.kurniasih@email.unikom.ac.id, Ferry Stephanus Suwita <ferry.stephanus.s@gmail.com>, tri.rahajoeningroem@email.unikom.ac.id, John Adler <john.adler@email.unikom.ac.id>, wendi.zarman@email.unikom.ac.id, nizar@email.unikom.ac.id, syahrul.mauluddin@email.unikom.ac.id, andi.harapan@email.unikom.ac.id, Agus Mulyana <agus.mulyana@email.unikom.ac.id>, nkarniawati@yahoo.co.id, Riani Lubis <riani.lubis@email.unikom.ac.id>, julian.chandra@email.unikom.ac.id, rio.yunanto@email.unikom.ac.id, Salmon Priaji Martana Arsitek <ketuapt@unikom.ac.id>, didit@email.unikom.ac.id, romeiza.syafriharti@email.unikom.ac.id, isniar.budiarti@email.unikom.ac.id, kania.evita.dewi@email.unikom.ac.id, Bella Hardiyana <bellahardiyana@gmail.com>, IELTS Selvia <selvia.lorena@email.unikom.ac.id>, annisa@email.unikom.ac.id, andri.sahata@email.unikom.ac.id, hidayat@email.unikom.ac.id, rajab@email.unikom.ac.id, iyan.gustiana@email.unikom.ac.id, haniirmayanti@email.unikom.ac.id

Dear Authors,

We would like to inform you that the result of full paper review can be downloaded in our website system (http://incitest.unikom.ac.id) .
Please login with your account and revise your paper according to the suggestion from the reviewer.
The revised full paper should be submitted by system at the latest on March 31, 2019.

Your kind attention and cooperation would be much appreciated

Best Regards,

The Organizing Committee of INCITEST 2019

Riani Lubis <riani.lubis@email.unikom.ac.id> Fri, Mar 29, 2019 at 11:51 PM
To: INCITEST UNIKOM <incitest@email.unikom.ac.id>
Cc: usep.mohamad.ishaq@email.unikom.ac.id, dedi@unikom.ac.id, richi@email.unikom.ac.id, dewi.kurniasih@email.unikom.ac.id, Ferry Stephanus Suwita <ferry.stephanus.s@gmail.com>, tri.rahajoeningroem@email.unikom.ac.id, John Adler <john.adler@email.unikom.ac.id>, wendi.zarman@email.unikom.ac.id, nizar@email.unikom.ac.id, syahrul.mauluddin@email.unikom.ac.id, andi.harapan@email.unikom.ac.id, Agus Mulyana <agus.mulyana@email.unikom.ac.id>, nkarniawati@yahoo.co.id, julian.chandra@email.unikom.ac.id, rio.yunanto@email.unikom.ac.id, Salmon Priaji Martana Arsitek <ketuapt@unikom.ac.id>, didit@email.unikom.ac.id, romeiza.syafriharti@email.unikom.ac.id, isniar.budiarti@email.unikom.ac.id, kania.evita.dewi@email.unikom.ac.id, Bella Hardiyana <bellahardiyana@gmail.com>, IELTS Selvia <selvia.lorena@email.unikom.ac.id>, annisa@email.unikom.ac.id, andri.sahata@email.unikom.ac.id, hidayat@email.unikom.ac.id, rajab@email.unikom.ac.id, iyan.gustiana@email.unikom.ac.id, haniirmayanti@email.unikom.ac.id

Thank you for informing me.
[Quoted text hidden]