

Prof. NAZİFE BAYKAL

Personal Information

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Education Information

Doctorate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Bilgisayar Mühendisliği (Dr), Turkey 1990 - 1996

Post Graduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Bilgisayar Mühendisliği (Dr), Turkey 1988 - 1991

Under Graduate, Middle East Technical University, Faculty of Arts and Sciences, Department of Mathematics, Turkey 1983 - 1987

Dissertations

Doctorate, Hydips: A Hybrid neural network based diagnostic tool for perinatal surveillance, Middle East Technical University, Graduate School of Natural and Applied Sciences, Bilgisayar Mühendisliği (Dr), 1996

Post Graduate, Pattern recognition using Kohonen's self organizing feature map, Middle East Technical University, Graduate School of Natural and Applied Sciences, Bilgisayar Mühendisliği (Dr), 1991

Academic Titles / Tasks

Professor, Middle East Technical University, Graduate School of Informatics, Information Systems, 2007 - Continues

Professional Experience

Head of Department, Middle East Technical University, Graduate School of Informatics, Cybersecurity, 2015 - Continues

Director of The Institution, Middle East Technical University, Graduate School of Informatics, 2014 - Continues

Director of The Institution, Middle East Technical University, Graduate School of Informatics, 2011 - 2014

Director of The Institution, Middle East Technical University, Graduate School of Informatics, 2008 - 2011

Director of The Institution, Middle East Technical University, Graduate School of Informatics, 2005 - 2008

Advising Theses

BAYKAL N., Lynxtun, Post Graduate, G.ORAL(Student), 2018

BAYKAL N., A window-based characterization method for biophysical time series, Doctorate, D.KATIRCIOĞLU(Student), 2017

BAYKAL N., AN EFFICIENT AND NOVEL DETECTION TECHNIQUE FOR NEXT GENERATION WEB-BASED EXPLOIT KITS, Doctorate, E.SÜREN(Student), 2016

ÖZKAN YILDIRIM S., BAYKAL N., Developing and verifying a set of principles for the cyber security of the critical infrastructures of Turkey, Doctorate, B.KARABACAK(Student), 2015

YAZICI A., BAYKAL N., Database security in private database clouds, Post Graduate, O.ÇINAR(Student), 2015

BAYKAL N., A survey about the integration of social engineering attacks and cyber security policies exploiting Turkish vulnerabilities in Turkey, Post Graduate, A.TOSUN(Student), 2015

BAYKAL N., An infrastructure for efficient reporting workflow in grid based teleradiology applications, Doctorate, A.OZAN(Student), 2015

BAYKAL N., Semantic concept recognition from structured and unstructured inputs within cyber security domain, Post Graduate, A.GÖKHAN(Student), 2015

BAYKAL N., Virtual penetration testing with phase based vulnerability analysis, Post Graduate, E.ÇALIŞKAN(Student), 2015

BAYKAL N., Permission based malware detection analysis in Android applications, Post Graduate, U.PEHLİVAN(Student), 2014

ÇAKIR M. P. , BAYKAL N., Bibliometric analysis of clinical medicine publications in Turkey, Post Graduate, M.KOÇAK(Student), 2014

BAYKAL N., ACARTÜRK C., A comparison of classification algorithms for mobile malware detection: Market metadata as input source, Post Graduate, N.BALTACI(Student), 2014

BAYKAL N., Increasing trustworthiness of security critical applications using trusted computing, Doctorate, Y.UZUNAY(Student), 2014

BAYKAL N., Analysis and modeling of routing and security problems in wireless sensor networks with mathematical programming, Doctorate, D.İNCEBACAĞ(Student), 2013

BAYKAL N., User authentication and distinguishing child users from adults with keystroke dynamics, Doctorate, Y.UZUN(Student), 2013

BAYKAL N., Usability evaluation of mobile information and communications technology in health care, Doctorate, B.AKBAŞOĞLU(Student), 2013

BAYKAL N., AYDIN SON Y., A hybrid feature selection model for genome wide association studies, Doctorate, S.CAN(Student), 2013

BAYKAL N., A multi-layer model for privacy preserving policy making for disclosure of public health data, Doctorate, M.ALIZADEH(Student), 2013

BAYKAL N., Knowledge discovery in microarray data of bioinformatics, Doctorate, F.SALİH(Student), 2012

BAYKAL N., ATTACK TREE BASED INFORMATION TECHNOLOGY SECURITY METRIC INTEGRATING ENTERPRISE OBJECTIVES WITH VULNERABILITIES, Doctorate, B.KARABEY(Student), 2011

BAYKAL N., Bivariate random effects and hierarchical meta-analysis of summary receiver operating characteristic curve on fine needle aspiration cytology, Post Graduate, İ.ERTE(Student), 2011

BAYKAL N., AKKAYA A., A new framework for evaluation of field based academic performances of higher education institutions, Post Graduate, F.ÖMRÜUZUN(Student), 2011

BAYKAL N., Ontology based information extraction on free text radiological reports using natural language processing approach, Doctorate, E.SOYSAL(Student), 2010

ÖZKAN YILDIRIM S., BAYKAL N., University ranking by academic performance: A scientometrics study for ranking world universities, Post Graduate, O.ALAŞEHİR(Student), 2010

BETİN CAN A., BAYKAL N., A framework for ranking and categorizing medical documents, Doctorate, M.GH.(Student), 2010

BAYKAL N., Online health information seeking habits of middle aged and older people: A case study, Post Graduate, E.ÇAKIR(Student), 2010

BAYKAL N., Auditable and verifiable electronic voting with homomorphic RSA tallying, Doctorate, O.YÜCEL(Student), 2010

BAYKAL N., A new ontology and knowledge base system for performance measurement in health care, Doctorate, O.DENİZ(Student), 2010

BAYKAL N., NetON: A new tool for discovering the semantic potential of biomedical data in UMLS semantic network, Doctorate, B.GÜLDEN(Student), 2010

BAYKAL N., KARAGÖZ P., A hybrid methodology in process modeling: ?from-to chart process discovery?, Post Graduate, E.ESGİN(Student), 2009

BAYKAL N., Enhanced hole punching for RSSI location tracking in hospitals, Post Graduate, D.PEÇEL(Student), 2008

BAYKAL N., A secure wireless network architecture proposal to be used by governments in case of emergency situations, Post Graduate, M.AKSOY(Student), 2007

BAYKAL N., BATMAZ İ., Defect cause modeling with decision tree and regression analysis: A case study in casting industry, Post Graduate, B.BAKIR(Student), 2007

BAYKAL N., Bilişim suçu olarak çöp postalar, bu konuda dünyada hukuki ve bilişim düzenlemeleri ışığında ülkemize yol haritası, Post Graduate, H.CENGİZ(Student), 2007

BAYKAL N., TAŞKAYA TEMİZEL T., Person name recognition in Turkish financial texts by using local grammar approach, Post Graduate, Ö.BAYRAKTAR(Student), 2007

BAYKAL N., An XACML based framework for structured patient privacy policy (S3P), Post Graduate,

M.ALİZADEH(Student), 2006

BAYKAL N., Design and implementation of an unauthorized internet access blocking system validating the source information in internet access logs, Post Graduate, Y.UZUNAY(Student), 2006

BAYKAL N., The effects of hierarchy on mobile wireless sensor network coverage, Post Graduate, A.UMUT(Student), 2006

BAYKAL N., Performance parameters of wireless virtual private network, Post Graduate, S.İKİZ(Student), 2006

BAYKAL N., Special index retrieval mechanism for ontology based medical domain search engines, Post Graduate, M.KUBİLAY(Student), 2005

BAYKAL N., A new fuzzy-chaotic modelling proposal for medical diagnostic processes, Post Graduate, T.BEYAN(Student), 2005

BAYKAL N., A comparative study on computer aided detection and classification of microcalcifications on mammograms, Post Graduate, L.EFE(Student), 2005

BAYKAL N., An implementation on use of handheld technologies in medical research areas: Health habits and history questionnaire on a pocket PC, Post Graduate, E.KIYMAÇ(Student), 2005

BAYKAL N., AWPL: Building a custom wireless access point using open source software, Post Graduate, A.ÇAKIRCALI(Student), 2005

AKYÜREK S. Z. , BAYKAL N., A geographic information systems tool development for geostatistical analysis of endangered endemic vascular plants of Turkey, Post Graduate, B.DEMİRCİ(Student), 2005

BAYKAL N., Implementation and evaluation of an information system for the processes of Turkish faculty training program (ÖYP), Post Graduate, M.KURT(Student), 2004

BAYKAL N., On the efficiency of authentication protocols, digital signatures and their applications in e-health: Atop-down approach, Doctorate, K.BIÇAKCI(Student), 2003

BAYKAL N., Proposal for an integrated breast diseases research and national cancer registry system design and implementation, Post Graduate, O.DENİZ(Student), 2003

BAYKAL N., YILDIRIM İ. S. , A Web based information system for army schools, Post Graduate, M.DİVRİL(Student), 2001

BAYKAL N., Content and application management framework for for the web, Post Graduate, O.MAT(Student), 2001

BAYKAL N., A Web-based archiving system for documents and images, Post Graduate, N.ZEKİ(Student), 2001

Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- **I see EK: A lightweight technique to reveal exploit kit family by overall URL patterns of infection chains**
Suren E., ANGIN P., BAYKAL N.
TURKISH JOURNAL OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCES, vol.27, pp.3713-3728, 2019 (Journal Indexed in SCI)
- **A simulation environment for cybersecurity attack analysis based on network traffic logs**
Daneshgadah S., Oney M. U. , Kemmerich T., BAYKAL N.
MODELING AND SIMULATION OF COMPLEX COMMUNICATION NETWORKS, vol.18, pp.55-79, 2019 (Journal Indexed in SCI)
- **A window-based time series feature extraction method**
Katircioglu-Ozturk D., GÜVENİR H. A. , Ravens U., BAYKAL N.
COMPUTERS IN BIOLOGY AND MEDICINE, vol.89, pp.466-486, 2017 (Journal Indexed in SCI)
- **A vulnerability-driven cyber security maturity model for measuring national critical infrastructure protection preparedness**
Karabacak B., Yildirim S., Baykal N.
INTERNATIONAL JOURNAL OF CRITICAL INFRASTRUCTURE PROTECTION, vol.15, pp.47-59, 2016 (Journal Indexed in SCI)
- **Regulatory approaches for cyber security of critical infrastructures: The case of Turkey**
Karabacak B., Yildirim S., Baykal N.
COMPUTER LAW & SECURITY REVIEW, vol.32, pp.526-539, 2016 (Journal Indexed in SSCI)
- **A novel approach to optimize workflow in grid-based teleradiology applications**
Yılmaz A. O. , BAYKAL N.
COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, vol.123, pp.159-169, 2016 (Journal Indexed in SCI)
- **Polycymaking to preserve privacy in disclosure of public health data: a suggested framework**

Mizani M. A. , BAYKAL N.

JOURNAL OF MEDICAL ETHICS, vol.41, pp.263-267, 2015 (Journal Indexed in SCI)

- **URAP-TR: a national ranking for Turkish universities based on academic performance**
Alasehir O., ÇAKIR M. P. , ACARTÜRK C., BAYKAL N., AKBULUT U.
SCIENTOMETRICS, vol.101, pp.159-178, 2014 (Journal Indexed in SCI)
- **Attack Tree Based Information Security Risk Assessment Method Integrating Enterprise Objectives with Vulnerabilities**
Karabey B., BAYKAL N.
INTERNATIONAL ARAB JOURNAL OF INFORMATION TECHNOLOGY, vol.10, pp.297-304, 2013 (Journal Indexed in SCI)
- **A Knowledge Based Search Tool for Performance Measures in Health Care Systems**
Beyan O. D. , BAYKAL N.
JOURNAL OF MEDICAL SYSTEMS, vol.36, pp.201-221, 2012 (Journal Indexed in SCI)
- **Application of a data mining approach to derive operating rules for the Eleviyan irrigation reservoir**
Sattari M. T. , APAYDIN H., ÖZTÜRK F., BAYKAL N.
LAKE AND RESERVOIR MANAGEMENT, vol.28, pp.142-152, 2012 (Journal Indexed in SCI)
- **METADATA MANAGEMENT AND SEMANTICS IN MICROARRAY REPOSITORIES**
Kocabas F., CAN T., BAYKAL N.
BALKAN JOURNAL OF MEDICAL GENETICS, vol.14, pp.49-63, 2011 (Journal Indexed in SCI)
- **Design and evaluation of an ontology based information extraction system for radiological reports**
Soysal E., Cicekli I., BAYKAL N.
COMPUTERS IN BIOLOGY AND MEDICINE, vol.40, pp.900-911, 2010 (Journal Indexed in SCI)
- **An integrated approach to breast diseases and breast cancer registry and research: BDRS as a web-based multi-institutional model**
Kocgil O. D. , Baykal N.
COMPUTERS IN BIOLOGY AND MEDICINE, vol.37, pp.1414-1425, 2007 (Journal Indexed in SCI)
- **MedicoPort: A medical search engine for all**
Can A., Baykal N.
COMPUTER METHODS AND PROGRAMS IN BIOMEDICINE, vol.86, pp.73-86, 2007 (Journal Indexed in SCI)
- **Improved server assisted signatures**
Bicakci K., Baykal N.
COMPUTER NETWORKS, vol.47, pp.351-366, 2005 (Journal Indexed in SCI)
- **Health Informatics**
Baykal N.
BIOMATERIALS: FROM MOLECULES TO ENGINEERED TISSUES, vol.553, pp.337-358, 2004 (Journal Indexed in SCI)
- **SAOTS: A new efficient server assisted signature scheme for pervasive computing**
Bicakci K., Baykal N.
SECURITY IN PERVASIVE COMPUTING, vol.2802, pp.187-200, 2004 (Journal Indexed in SCI)
- **Server assisted signatures revisited**
Bicakci K., Baykal N.
TOPICS IN CRYPTOLOGY - CT-RSA 2004, PROCEEDINGS, vol.2964, pp.143-156, 2004 (Journal Indexed in SCI)
- **A new design of privilege management infrastructure with binding signature semantics**
Bicakci K., Baykal N.
PUBLIC KEY INFRASTRUCTURE, PROCEEDINGS, vol.3093, pp.306-313, 2004 (Journal Indexed in SCI)
- **One-time passwords: Security analysis using BAN logic and integrating with smartcard authentication**
Bicakci K., Baykal N.
COMPUTER AND INFORMATION SCIENCES - ISCIS 2003, vol.2869, pp.794-801, 2003 (Journal Indexed in SCI)
- **INTERPRETATION OF DOPPLER BLOOD-FLOW VELOCITY WAVE-FORMS USING NEURAL NETWORKS**
BAYKAL N., REGGIA J., YALABIK N., ERKMEN A., BEKSAC M.
JOURNAL OF THE AMERICAN MEDICAL INFORMATICS ASSOCIATION, pp.865-869, 1994 (Journal Indexed in SCI)

Articles Published in Other Journals

- **Evaluating learning management systems: Adoption of hexagonal e-learning assessment model in higher education**
Ozkan S., Koseler R., BAYKAL N.
Transforming Government: People, Process and Policy, vol.3, pp.111-130, 2009 (Refereed Journals of Other Institutions)

Refereed Congress / Symposium Publications in Proceedings

- **Detection of DDoS Attacks and Flash Events Using Shannon Entropy, KOAD and Mahalanobis Distance**
Daneshgadeh S., Ahmed T., Kemmerich T., BAYKAL N.
22nd International Conference on Innovation in Clouds, Internet and Networks and Workshops (ICIN), Paris, France, 18 - 21 February 2019, pp.222-229
- **An Empirical Investigation of DDoS and Flash Event Detection Using Shannon Entropy, KOAD and SVM Combined**
Daneshgadeh S., Kemmerich T., Ahmed T., BAYKAL N.
International Conference on Computing, Networking and Communications (ICNC), Hawaii, United States Of America, 18 - 21 February 2019, pp.658-662
- **DDoS Attack Modeling and Detection Using SMO**
Daneshgadeh S., BAYKAL N., ERTEKİN BOLELLİ Ş.
16th IEEE International Conference on Machine Learning and Applications (ICMLA), Cancun, Mexico, 18 - 21 December 2017, pp.432-436
- **Binary Classification Performance Measures/Metrics: A Comprehensive Visualized Roadmap to Gain New Insights**
Canbek G., SAĞIROĞLU Ş., TAŞKAYA TEMİZEL T., BAYKAL N.
2017 International Conference on Computer Science and Engineering (UBMK), Antalya, Turkey, 5 - 08 October 2017, pp.821-826
- **Clustering and Visualization of Mobile Application Permissions for End Users and Malware Analysts**
Canbek G., BAYKAL N., SAĞIROĞLU Ş.
5th International Symposium on Digital Forensic and Security (ISDFS), Tirgu Mures, Romania, 26 - 28 April 2017
- **Differential Attacks on Lightweight Block Ciphers PRESENT, PRIDE, and RECTANGLE Revisited**
TEZCAN C., OKAN G. O. , Senol A., Dogan E., Yucebas F., BAYKAL N.
5th International Workshop on Lightweight Cryptography for Security and Privacy (LightSec), Cappadocia, Turkey, 20 - 21 September 2016, vol.10098, pp.18-32
- **Feature Extraction and Classification Phishing Websites Based on URL**
Aydin M., BAYKAL N.
IEEE Conference Communications and Network Security CNS, Florence, Italy, 28 - 30 September 2015, pp.769-770
- **The Analysis of Feature Selection Methods and Classification Algorithms in Permission Based Android Malware Detection**
Pehlivan U., Baltaci N., ACARTÜRK C., BAYKAL N.
IEEE Symposium on Computational Intelligence in Cyber Security, Florida, United States Of America, 9 - 12 December 2014, pp.81-88
- **An Infrastructure for Efficient Reporting Workflow in Grid Based Teleradiology Architectures Using Relation Based Semantic Matching and Integer Linear Programming**
Yılmaz A. O. , BAYKAL N.
Federated Conference on Computer Science and Information Systems (FedCSIS), Warszawa, Poland, 7 - 10 September 2014, vol.2, pp.241-245
- **Integration of Federated Medical Systems for Vendor Neutral Image Access in Teleradiology Applications**
Yılmaz A. O. , BAYKAL N.
25th European Medical Informatics Conference (MIE), İstanbul, Turkey, 31 August - 03 September 2014, vol.205, pp.538-542

- **Turkey's Approaches on Cyber Security Policy Framework**
 BAYKAL N.
 NATO Advanced Research Workshop (ARW) on Best Practices and Innovative Approaches to Develop Cyber Security and Resiliency Policy Framework, Ohrid, Macedonia, 10 - 12 June 2013, vol.38, pp.82-98
- **Homomorphic RSA Tallying and Its Randomization for e-Voting**
 Yucel O., BAYKAL N.
 6th International Conference on e-Government, Cape-Town, South Africa, 30 September - 01 October 2010, pp.160-167
- **Voter Verifiable and Single Transferable Electronic Voting for Elections with Electoral Barriers**
 Yucel O., BAYKAL N.
 9th European Conference on e-Government, London, Canada, 29 - 30 June 2009, pp.703-710
- **Evaluating learning management systems: Hexagonal e-learning assessment model (HELAM)**
 Ozkan S., Koseler R., BAYKAL N.
 5th European and Mediterranean Conference on Information Systems, EMCIS 2008, Dubai, United Arab Emirates, 25 - 26 May 2008
- **Assessing hospital information systems processes: A validation of prise information systems success model in healthcare**
 Ozkan S., BAYKAL N., Sincan M.
 14th Americas Conference on Information Systems, AMCIS 2008, Toronto, Canada, 14 - 17 August 2008, vol.6, pp.3956-3967
- **EVEREST: An efficient method for verification of digital signatures in real-time teleradiology**
 Bicakci K., Baykal N.
 11th World Congress on Medical Informatics, San-Francisco, Costa Rica, 7 - 11 September 2004, vol.107, pp.1241-1245
- **A GIS system for ambulatory transportation**
 Gulden B., Mumcuoglu E., Baykal N.
 2nd IASTED International Conference on Biomedical Engineering, Innsbruck, Austria, 16 - 18 February 2004, pp.431-435
- **Optimization of an online course with web usage mining**
 Akman L., Akkan B., Baykal N.
 IASTED International Conference on Artificial Intelligence and Applications, Innsbruck, Austria, 16 - 18 February 2004, pp.21-25
- **Design and performance evaluation of a flexible and efficient server assisted signature protocol**
 Bicakci K., Baykal N.
 8th IEEE International Symposium on Computers and Communication (ISCC 2003), Antalya, Turkey, 30 June - 03 July 2003, pp.1239-1244
- **Infinite length hash chains and their applications**
 Bicakci K., Baykal N.
 11th IEEE International Workshop on Enabling Technologies - Infrastructure for Collaborative Enterprises (WET ICE 2002), Pennsylvania, United States Of America, 10 - 12 June 2002, pp.57-61
- **Wireless and mobile security**
 Bicakci K., Baykal N.
 5th International Conference on Knowledge-Based Intelligent Information Engineering Systems and Allied Technologies (KES 2001), Osaka, Japan, 6 - 08 September 2001, vol.69, pp.1282-1286
- **Resilient backpropagation for RBF networks**
 Baykal N., Erkmén A.
 4th International Conference on Knowledge-Based Intelligent Engineering Systems and Allied Technologies, Brighton, United Kingdom, 30 - 31 August 2000, pp.624-627
- **Tagged potential field extension to self organizing feature maps**
 Baykal N., Erkmén A.
 2nd International Conference on Knowledge-Based Intelligent Electronic Systems (KES 98), Adelaide, Australia, 21 - 23 April 1998, pp.292-298
- **An experimental comparison of symbolic and neural learning algorithms**

Baykal N., Tolun M.

2nd International Conference on Knowledge-Based Intelligent Electronic Systems (KES 98), Adelaide, Australia, 21 - 23 April 1998, pp.306-315

- **Step down logistic regression for feature selection**

Baykal N.

International Conference on Applied Statistical in Medical Sciences, Ankara, Turkey, 01 August 1997, vol.4, pp.121-131

Supported Projects

BAYKAL N., ÖZDEMİR O. B. , Project Supported by Higher Education Institutions, Mobil Zararlı Yazılımların Analizi Sistemi Geliştirilmesi, 2014 - 2016

BAYKAL N., ÇAKIR M. P. , Ömrüzun F., AKKAYA A., GÜREL KÖYBAŞI N. A. , BARIŞ B. T. , ACARTÜRK C., Koçak M., Project Supported by Higher Education Institutions, Dünya Üniversiteleri Akademik Performanslarının İncelenmesi., 2012 - 2014

BAYKAL N., Project Supported by Higher Education Institutions, Dünya Üniversiteleri Akademik Performanslarının İncelenmesi, 2011 - 2012

BAYKAL N., Project Supported by Higher Education Institutions, Mobil Kişisel Sağlık Platformu., 2010 - 2010

Patent

BAYKAL N., Method and Tool for Information Security Assessment that Integrates Enterprise Objectives with Vulnerabilities, Patent, CHAPTER F Mechanical engineering; Lighting; Heating; Weaponry; Destroyed Materials, Initial Registration, 2013

Citations

Total Citations (WOS):155

h-index (WOS):7