

Andrei Hodorog

CIVIL ENGINEERING & BIM RESEARCHER · FULL-STACK DEVELOPER · UI / UX ENTHUSIAST · SECURITY ENTHUSIAST ·

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“Be the change that you want to see in the world.”

Education

Cardiff School of Engineering, Cardiff University

Cardiff, United Kingdom

PHD: “THE ROLE OF SEMANTICS FOR ENHANCING USER EXPERIENCE OF APPLICATIONS IN THE BUILT ENVIRONMENT”

In progress

Cardiff School of Computer Science, Cardiff University

Cardiff, United Kingdom

BSC. COMPUTER SCIENCE WITH SECURITY AND FORENSICS (FIRST CLASS HONOURS DEGREE ACHIEVED)

Sep. 2010 - Jul. 2017

- Python, Web Applications, Developing Quality Software, Professional Skills, Java, Architecture and Operating Systems, Human Computer Interaction, Networking, Database Systems, Algorithms and Data Structures, Advanced Programming, Security, Forensics, Knowledge Management, Large scale databases, Emerging Technologies
- Final year project: Crowdfunding platform for civic projects - involving full frontend stack and REST APIs with Java (Spring MVC) for the backend

Experience

Cardiff University

Cardiff, United Kingdom

RESEARCH ASSISTANT

Jul. 2017 - PRESENT

- Developed and Maintained User Interfaces and Design Patterns for applications in the Built Environment
- Integrated RESTful APIs with User Interfaces for large scale projects, such as Computational Urban Sustainability Platform (www.cusplatform.com) and Energy-BIM (www.energy-bim.com)
- Conducting and compiling research involving User Experience and Semantics linked to the aforementioned projects
- Built and maintained web services, performed active monitoring and security enhancements through top layer solutions such as Google Analytics, Wopra and Cloudflare
- Built and deployed overall service infrastructure utilising Docker containers and live data centres, focusing on high-availability, fault tolerance, and automated resource scaling
- Teaching assistant and support for the following modules: Big Data & AI in Civil Engineering, Integrated Building / Infrastructure Design

XPress Reflect (www.xpreflect.co.uk)

Global

FOUNDER AND WEB DEVELOPER

2020 - Present

- designing and developing bespoke web projects for medium sized businesses in the UK
- bringing several websites into the first page of Google for local searches
- offering general WordPress consultancy, with a focus on security and reliability
- managing a dedicated server

CreditSafe (www.creditsafe.com)

Cardiff, United Kingdom

FULL STACK DEVELOPER

Feb. 2017 - Jun. 2017

- adapted the SalesJoe lead generator (www.salesjoe.com) for mobile devices
- increased the test coverage to 80% for unit tests in Jasmine
- increased the accuracy of lead ownerships through a logging feature for prospect clients status changes
- technologies used: VueJS, Node, ElasticSearch, CassandraDB

InspireTec (www.inspiretec.com)

Cardiff, United Kingdom

FRONTEND DEVELOPER

Aug. 2015 - Sep. 2016

- Involved in developing the frontend for various international projects for the travel industry, including the main product (Holistic), Travel.co.uk, CAA South Ontario, ScotiaBank.
- Implemented from scratch the frontend for the CAASCO Travel flights, hotels and packages search and booking systems (www.caasco.com/Travel.aspx).
- Implemented branding configurability (white labelling features) to add resale capabilities for the platform
- Used full frontend stack (Jade, Handlebars, Less, Sass, JavaScript, Gulp)

Cardiff University

Cardiff, United Kingdom

RESEARCH ASSISTANT INTERNSHIP

Jul. 2014 - Sep. 2014

- Used various APIs to collect information about the users, used data mining and data warehousing techniques in PHP, MySQL and Python
- used database optimisation and parsing techniques
- determined the age and gender of the users using intelligent tag cloud word analysis and LIWC (Linguistic Inquiry and Word Count)
- produced 2 research papers: <http://dx.doi.org/10.1016/j.comcom.2015.07.018> and <http://dx.doi.org/10.1016/j.osnem.2017.08.001>

Journal Papers Published

Clean Technologies and Environmental Policy Journal

Edition 23, pp. 1215-1231

BUILDING INFORMATION MODELLING KNOWLEDGE HARVESTING FOR ENERGY EFFICIENCY IN THE CONSTRUCTION INDUSTRY

Nov. 2020

- This paper adopts a novel text-mining approach which analyses social media alongside secondary sources of evidence to establish a level of correlation between BIM roles and skills. The use of ontological dependency analysis has helped to understand the degree of correlation of skills with roles as a method to inform training and educational programmes. A key outcome from the research is a semantic web-based mining environment which determines BIM roles and skills, as well as their correlation factor, with an application for energy efficiency. The paper also evidences that (a) construction skills and roles are dynamic in nature and evolve over time, reflecting the digital transformation of the Construction industry, and (b) the importance of socio-organisational aspects in construction skills and related training provision.
- Research paper link: <http://dx.doi.org/10.1007/s10098-020-02000-z>

Online Social Networks and Media

Edition 2, pp. 32-44

MULTI-CLASS MACHINE CLASSIFICATION OF SUICIDE-RELATED COMMUNICATION ON TWITTER

Aug. 2017

- In this paper we report the results of a number of machine classifiers built with the aim of classifying text relating to suicide on Twitter. The classifier distinguishes between the more worrying content, such as suicidal ideation, and other suicide-related topics such as reporting of a suicide, memorial, campaigning and support. It also aims to identify flippant references to suicide. We built a set of baseline classifiers using lexical, structural, emotive and psychological features extracted from Twitter posts. We then improved on the baseline classifiers by building an ensemble classifier using the Rotation Forest algorithm and a Maximum Probability voting classification decision method, based on the outcome of base classifiers. This achieved an F-measure of 0.728 overall (for 7 classes, including suicidal ideation) and 0.69 for the suicidal ideation class. We summarise the results by reflecting on the most significant predictive principle components of the suicidal ideation class to provide insight into the language used on Twitter to express suicidal ideation. Finally, we perform a 12-month case study of suicide-related posts where we further evaluate the classification approach - showing a sustained classification performance and providing anonymous insights into the trends and demographic profile of Twitter users posting content of this type.
- Research paper link: <http://dx.doi.org/10.1016/j.osnem.2017.08.001>

Computer Communications Journal

Edition 73(B), pp. 291-300

ANALYSING THE CONNECTIVITY AND COMMUNICATION OF SUICIDAL USERS ON TWITTER

Jul. 2015

- In this paper we aim to understand the connectivity and communication characteristics of Twitter users who post content subsequently classified by human annotators as containing possible suicidal intent or thinking, commonly referred to as suicidal ideation. We achieve this understanding by analysing the characteristics of their social networks. Starting from a set of human annotated Tweets we retrieved the authors' followers and friends lists, and identified users who retweeted the suicidal content. We subsequently built the social network graphs. Our results show a high degree of reciprocal connectivity between the authors of suicidal content when compared to other studies of Twitter users, suggesting a tightly-coupled virtual community. In addition, an analysis of the retweet graph has identified bridge nodes and hub nodes connecting users posting suicidal ideation with users who were not, thus suggesting a potential for information cascade and risk of a possible contagion effect. This is particularly emphasised by considering the combined graph merging friendship and retweeting links.
- Research paper link: <http://dx.doi.org/10.1016/j.comcom.2015.07.018>

Conference Papers Presented

Neural Network-based Predictive Control System for Energy Optimization in Sports

Luxembourg

Facilities: A Case Study

PRESENTED AT <38TH CIB W78 CONFERENCE ON INFORMATION AND COMMUNICATION TECHNOLOGIES>

Oct. 2021

- In this work, the theory of model predictive control MPC is combined with neural networks for temperature setpoint selection to achieve energy and performance optimization of sports facilities. It is demonstrated using the building information model BIM of a sports hall in the sports complex of Qatar University. MPC systems are powerful as they allow integrated dynamic optimization that accounts for the future system behavior in the decision-making process, while neural networks are advantageous for their ability to represent complex interdependencies with high accuracy. The proposed approach was able to achieve a total energy savings of around 10%. Considerations about the network performance, MPC settings tuning, and optimization sub-optimality or failure are essential during the design and implementation phases of the proposed system.
- Research paper link: <https://itc.scix.net/pdfs/w78-2021-paper-073.pdf>

Building Energy Management Systems for Sports Facilities in the Gulf Region: A Focus on Impacts and Considerations

Luxembourg

PRESENTED AT <38TH CIB W78 CONFERENCE ON INFORMATION AND COMMUNICATION TECHNOLOGIES>

Oct. 2021

- This paper aims to emphasize the significance of energy management in sports facilities especially for hot climatic regions. It presents a review of the works for optimizing building management systems' (BMSs) operation, anomaly diagnosis, and mitigation. It indicates their application scarcity for sports facilities compared to other types of buildings, and for the regions with hot and humid weather conditions compared to amiable and cold ones, in addition to the considerations for optimizing BMSs of sports facilities based on their type and regional location. An overview is presented of the impacts related to the security and the reliable operation of the BMSs of sports facilities given the advancements in the deployed technologies.
- Research paper link: <https://itc.scix.net/pdfs/w78-2021-paper-072.pdf>

Social media mining for BIM skills and roles for energy efficiency

Sophia-Antipolis, France

PRESENTED AT <ICE/IEEE ITMC 2019 - INTERNATIONAL CONFERENCE ON ENGINEERING, TECHNOLOGY AND INNOVATION>

Jun. 2019

- In this paper, we explore the dynamic nature of BIM with associated skills and roles and demonstrate how engagement and training can be informed by social media analysis to identify roles, skills and training needs. We conduct a data mining process by analysing the Twitter data of various companies and institutions involved in the BIM construction sector to discover new skills and roles for energy efficiency
- Research paper link: <http://dx.doi.org/10.1109/ICE.2019.8792571>

SSH Tunneling - A gate to freedom and a threat

Bucharest, Romania

PRESENTED AT <DEFCAMP 2014: DEFCAMP 2014 - INTERNATIONAL INFORMATION SECURITY CONFERENCE>

Nov. 2014

- real-world example of my University, the techniques for selecting the traffic that needs to be tunneled, issues related to detecting tunneled traffic, separating legitimate from illegitimate traffic and partial mitigation techniques in the corporate environment

Programme and Project Committees

2021	Organising Committee and session chair , 2021 edition of the ICE/IEEE ITMC International Conference on Engineering, Technology and Innovation	Cardiff, UK
2020	Organising Committee and session chair , 2020 edition of the ICE/IEEE ITMC International Conference on Engineering, Technology and Innovation	Cardiff, UK
2018	Organising Committee and session chair , 19th IFIP / SOCOLNET Working Conference on Virtual Enterprises, PRO-VE	Cardiff, UK
2011	School representative , COMENIUS EU-funded project (Travel Online, Understand Routes, Itineraries and Sustainable Tourism through TIC)	Nicosia, Cyprus
2010	School representative , Leonardo Da Vinci EU-funded project (LLP-LdV/IVT/09/RO/101)	Karlsruhe, Germany

Honours & Awards

2019	Best Paper Award , Douglas Award contest by South Wales Institute of Engineers Educational Trust	Cardiff, UK
2017	First-Class Honours , Distinction in the Undergraduate degree in Computer Science with Security and Forensics	Cardiff, UK
2014	Cardiff Award , For outstanding academic and volunteering performance	Cardiff, UK
2012	First score , The CISCO Networking Academy "NetRiders 2012 – Student Challenge", contest	Online
2012	Third Prize , The "Infoeducation 2012" contest, international stage	Galaciu, RO
2013	Nomination for The Award for Best Academic Performance , Romanian Students League Abroad Contest	London, UK
2014	The Cardiff Award , Cardiff University Students Union volunteering and academic performance	Cardiff, UK

Certifications

IT

2020	Ethereum 101 , Programming and deployment of Ethereum Smart Contracts via Solidity and Ganache	Moralis Academy (former known as Ivan on Tech Academy)
2020	Blockchain Fundamentals , Blockchain architecture and technical dynamics (proof of work, proof of stake, consensus, transaction validation) and inspecting Bitcoin blockchain transactions	Moralis Academy (former known as Ivan on Tech Academy)
2020	Cryptocurrency fundamentals , Cryptocurrency fundamental knowledge and practical applications (types of cryptoasset transactioning, market types, capitalisation, tokenomics)	Crypto.com Academy
2012	SQL Databases , Oracle	Oracle
2012	Computer Networks , Cisco Certified Network Associate (course completion only)	Cisco

OTHERS

2017	Health & Safety Certificate , Emergency First Aid at Work	CITB
2013	Completion Certificate , STEPS Towards Excellence Personal Development Programme	The Pacific Institute
2013	C2 (Native level) English Language Certificate , IELTS - International English Language Testing System	The British Council

Extracurricular Activity & Volunteering

Psychology and Philosophy courses at Cardiff University

Cardiff, United Kingdom

CONTINUING PROFESSIONAL EDUCATION / PATHWAY TO A SECOND DEGREE COURSES

Jan. 2017 - PRESENT

- Abnormal Psychology (topics: cluster A, B and C personality disorders and malfunctions of the brain through various conditions and chemical imbalances)
- Developmental Psychology (topics: Eriksson psycho-social developmental stages, Piaget stages, Freud psycho-sexual developmental stages)
- Philosophy of Religion (topics: teleological argument, ontological argument, design argument, religious experience argument)

Cardiff University Sexual Health Awareness Group

Cardiff, United Kingdom

HIV ADVOCATE AND DOTCOM OFFICER

Jan. 2014 - Jun. 2014

- Designing and distributing HIV awareness and prevention materials
- Holding HIV prevention talks
- designing and maintaining the website: www.cushag.com

Radio Iasi Romania (www.radioiasi.ro)

Online & FM Airwaves

RADIO SHOW PRESENTER

Nov. 2011 - PRESENT

- presenting a weekly IT-related news radio show and giving IT advice to the population, helping to develop an industry awareness

Skills

Programming	Node.JS, Python, Java, LaTeX, Docker
Web	Express, VueJS, Javascript, HTML5, LESS, SASS, Webpack, Gulp, Jade, Handlebars, SEO, social media marketing
Languages	English, French, Spanish, Romanian
General IT	design and configuration of medium-sized computer networks; essential knowledge and experience with information security, forensics and cryptography, Linux operating system command line interface, remote support skills
Professional	leadership and brainstorming sessions coordination proven through the web development group I founded and various team projects I was involved as part of my course, tact, patience, avoiding and settling conflicts, presentation skills (lectures, seminars)