

IMANE LAMRANI

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RESEARCH INTEREST

AI-enabled Cyber-Physical Systems, Formal Safety Verification, Model Mining, Safe Autonomous Systems, Machine Learning.

EDUCATION

Arizona State University

Ph.D. in Computer Engineering

Jan. 2015 - May. 2020

Advisor: Dr. Sandeep Gupta

- Thesis: Operational Safety Verification Via Hybrid Automata Mining Using I/O Traces of AI-Enabled CPS

Jacksonville State University

M.S. in Computer Systems and Software Design

August. 2012 - May. 2014

Advisor: Dr. Guillermo Francia

- Thesis: Modeling and Simulation of attacks on SCADA systems using Simulink/Truetime

Faculté des Sciences de Kénitra, Morocco

Master1 in Intelligent Systems

Sep. 2011 - Jul. 2012

Advisor: Dr. Rajae Touahni

Faculté des Sciences et Techniques de Fes, Morocco

Bachelor of Electronics, Telecommunications, and Computer Science

Sep. 2009 - Jul. 2011

Advisor: Dr. Ali Ahaitouf

HONORS AND AWARDS

French-American Doctoral Exchange-CPS Laureate: One of the 10 laureates (U.S doctoral students) chosen by the Office for Science and Technology-France 2016

International House Scholarship from JSU 2012

Merit Scholarship from Faculté des Sciences de Kénitra 2011

PUBLICATIONS

JOURNAL

6. [IEEETII'19] Imane Lamrani, Ayan Banerjee, and Sandeep K.S Gupta. "N-HyMn: Mining Non-Linear Hybrid Systems from Input Output Traces of Cyber-Physical Systems." *IEEE Transactions On Industrial Informatics*, 2019. (under review)

CONFERENCE

5. [AAAI'20] Imane Lamrani, Ayan Banerjee, and Sandeep K.S Gupta. "Operational Safety Verification Via Hybrid Automata Mining Using I/O Traces of AI-Enabled CPS." 2020, (under review).
4. [AITEST'19] Ayan Banerjee, Imane Lamrani, Prajwal Paudyal, Sandeep Gupta. "Generation of Movement Explanations for Testing Gesture Based Co-Operative Learning Applications." *IEEE International Conference On Artificial Intelligence Testing*, 2019.
3. [ICPS'18] Imane Lamrani, Ayan Banerjee, and Sandeep K.S Gupta. "N-HyMn: Mining Non-Linear Hybrid Systems from Input Output Traces of Cyber-Physical Systems." *IEEE Industrial Cyber-Physical Systems*, 2018.

2. [STAF'18] Imane Lamrani, Ayan Banerjee, and Sandeep K.S Gupta. "Co-simulation of Physical Model and Self-Adaptive Predictive Controller Using Hybrid Automata." *Federation of International Conferences on Software Technologies: Applications and Foundations*, 2018.

TUTORIAL

1. [AAAI'20] Sandeep K.S. Gupta, Ayan Banerjee, Imane Lamrani. "Explainable AI for Establishing Trust in and Safety of AI enabled Cyber Physical Systems." *Thirty-Fourth Conference on Artificial Intelligence*, 2020. (under review)

NON-PROVISIONAL PATENT

"Systems and Methods for Hybrid Automata Mining From Input-Output Traces of Cyber-Physical Systems", M18-258P, Filed May 15, 2019.

INDUSTRIAL EXPERIENCES

Food and Drug Administration (Silver Spring, MD) May. 2017- Aug. 2017
ORISE Research Fellow

- Project: Modeling medical devices with self-adaptive predictive control using hybrid automata and co-Simulation

Square Zero, Inc (Santa Barbara, CA) May. 2013- Jan. 2014
Research Intern

- Project: Analysis and implementation of factoring algorithms.

Société Nationale de Radiodiffusion et Télévision (SNRT) (Rabat, Morocco) Summer 2011
Intern

- Project: Implemented a VLSI for Reed Solomon Code for errors detection and correction (Graduation Project).

Regie Autonome de Distribution d'Eau et d'Électricité Fes (RADEEF) (Fes, Morocco) Summer 2009
Intern-Shadow

- Gained industrial experience in the Moroccan company for Distribution of Water and Electricity

ACADEMIC SERVICES

- Teaching Assistant at ASU: Principles of Programming with Java, Object-Oriented Program, Intro to Programming Languages, Data Structures and Algorithms, and Operating Systems
- Instructor at ASU: CSE 485 (Capstone), ASU101-CSE
- Graduate Assistant in the MCIS department at JSU
- JSU Advancement Services Student Worker: Helped with database administration using TALISMA and Account-Mate

TALKS

2. "Robust Controller Software Synthesis for Non-linear Safety Critical Cyber-Physical Systems", *FADEX-CPS'16 Seminar Auditorium, bâtiment IMAG, Grenoble/U.S.*, 2016.
1. "Generation of Movement Explanations for Testing Gesture Based Co-Operative Learning Application", *AITEST'19 Doubletree By Hilton Newark - Fremont, San Fransisco/France*, 2019.

MENTORING, LEADERSHIP & ACTIVITIES

- AAAI-20 Student Abstract and Poster Program. "Operational Safety Verification Via Hybrid Automata Mining Using I/O Traces of AI-Enabled CPS". (under review)
- Twenty-Fifth AAAI/SIGAI Doctoral Consortium. "Information Theoretic ML-Based Approach for Mining Formal Safety Verification Model of AI-enabled CPS Using Operational Data". (under review)
- French-American Doctoral Exchange Program (Class of 2016): One of 10 American doctoral students on cyber-physical systems chosen to participate in FADEx.
- JSU International House Program Student (class of 2012): One of 20 international students from different countries represented at the International House Program.

LANGUAGES

Arabic, English, and French: fluent writing, reading and speaking

SKILLS

Php, C, C++, HTML, Java, CSS, SQL, PL-SQL, MySql, Python, Matlab, Simulink.