

Alexander C. Michels

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🎓 Education

University of Illinois at Urbana-Champaign

Ph.D. in Informatics

– Pursuing the Spatial Informatics concentration under Dr. Shaowen Wang

📍 Champaign, IL

June 2019-Present

Westminster College

Bachelor of Science in Mathematics and Financial Economics

– Honors Thesis: “Capturing the Predictive Power of Cortical Learning Algorithms

– Minor in Computer Science — Graduated Cum Laude — Honors in Computer Science and Math — 3.7 GPA

📍 New Wilmington, PA

August 2015 - May 2019

🔍 Research Experience

CyberGIS and CyberInfrastructure Researcher

CyberGIS Center and CyberInfrastructure & Geospatial Information Laboratory (CIGI)

– Conducting spatial informatics research under Dr. Shaowen Wang.

– On Algorithms and Systems team, building cyberinfrastructure including Hadoop and Kubernetes clusters

– On Spatial Modeling team, programming spatial models and simulations

📍 Champaign, IL

June 2019-Present

Informatics Researcher

Institute for Pure and Applied Mathematics at UCLA / Praedicat, Inc.

– Worked for Praedicat, Inc. automating information extraction, classification, and aggregation from web data for business profiling of over 52,600 companies and corporate entities.

– Worked for IPAM to develop a novel algorithm for computational fact-checking on knowledge graphs and a self-supervised machine learning algorithm for sentence importance which outperformed TF-IDF.

📍 Los Angeles, CA

June 2018 - August 2018

Computational Finance Research Assistant

Dr. Charles Shaffer

– Integrated cryptocurrency trading into Dr. Shaffer’s algorithmic currency trading application.

📍 New Wilmington, PA

January 2017 - May 2018

🏛 Teaching Experience

Teaching Assistant and Tutor

Westminster College

– Assisted professors in grading, working with students individually, and developing curriculum for classes covering coursework in Calculus, Computer Science, and Operations Research.

📍 New Wilmington, PA

August 2015 - December 2018

📄 Papers

- [1] J.-Y. Kang, J. Aldstadt, **A. C. Michels**, R. Vandewalle, and S. Wang, “Cybergis-Jupyter for Spatially Explicit Agent-based Modeling: A Case Study on Influenza Transmission,” Nov 2019. ACM SIGSPATIAL’19 Geospatial Simulation Workshop.
- [2] **A. C. Michels**, “Capturing the Predictive Power of Cortical Learning Algorithms,” May 2019. Bachelor’s thesis.
- [3] H. Ahuja and **A. C. Michels**, “Computational Fact-Checking through Relational Similarity based Path Mining,” Jan 2019. AMS Contributed Paper Session at the 2019 Joint Mathematics Meeting.
- [4] H. Ahuja, **A. C. Michels**, and L. Shi, “Information Extraction and Aggregation from Unstructured Web Data for Business Profiling,” tech. rep., Institute for Pure and Applied Mathematics and Praedicat, Inc., Los Angeles, California, Aug 2018.

Research Interests

- Agent-Based Models
- Complex Systems
- High-Performance Computing
- Network Science
- Spatial Optimization
- Topological Data Analysis

Selected Presentations

Oral Presentations

Capturing the Predictive Power of Cortical Learning Algorithms

National Conference on Undergraduate Research

April 2019

♥ Atlanta, GA

Computational Fact-Checking through Knowledge Graphs

AMS Contributed Paper Session at 2019 Joint Mathematics Meeting

January 2019

♥ Baltimore, MD

Information Extraction and Aggregation for Business Profiling

Invited Talk at Institute for Pure and Applied Mathematics

July 2018

♥ Los Angeles, CA

Decentralizing the World with Blockchain

Undergraduate Research & Arts Celebration

April 2018

♥ New Wilmington, PA

Repeated Play Games

MAA, Allegheny Mountain Section Meeting

April 2017

♥ Pittsburgh, PA

Optimizing Throughput, Cost, and Safety in Toll Booth Plazas

Pi Mu Epsilon Regional Conference

February 2017

♥ Youngstown, OH

Poster Presentations

CyberGIS-Jupyter for Spatially Explicit Agent-based Modeling

Illinois GIS Day

November 2019

♥ Champaign, IL

Computational Fact-Checking through Knowledge Graphs

Undergraduate Research Poster Session at 2019 Joint Mathematics Meeting

January 2019

♥ Baltimore, MD

Agent-Based Simulations for Repeated Play Game Theory

Undergraduate Research & Arts Celebration

April 2017

♥ New Wilmington, PA

Awards

UCGIS Prize for Advances in Geospatial Problem Solving

“Advancing Reproducibility in Geospatial Research at the AAG-UCGIS Summer School 2019”

July 2019

UIUC

Best Robot in Division Prize for Senior Unique Division

“Robot in the Division with the lowest Total Final Scores”

April 2018

Trinity Fire Fighting Robot Contest

North America Award for Level 2

“The top North American robot in Level 2”

April 2018

Trinity Fire Fighting Robot Contest

Dr. Thomas R. Nealeigh Mathematics Scholarship

“awarded to an outstanding junior or senior mathematics major”

March 2018

Westminster College

Paul E. Brown Memorial Scholarship

“given based on merit and academic achievement”

March 2017

Westminster College

Honorable Mention

“excellent modeling and sensitivity analysis”

January 2017

COMAP International Mathematical Modeling Competition

Mathematics Book Award

“presented to the sophomore Mathematics major with the highest GPA”

March 2017

Westminster College

Professional Associations

American Association of Geographers

Specialty Groups:

- Cyberinfrastructure
- Economic Geography
- Socialist and Critical Geography
- Spatial Analysis and Modeling
- Transportation Geography