MARCOS ORTIZ, PHD

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SUMMARY

I am a mathematician, researcher, scientist, and teacher. I love to explore technical questions and puzzles, and learn about new tools that can be applied to solving these problems. I have recently become particularly interested in developments in machine learning, and data science. I am currently seeking opportunities in these fields.

EDUCATION

PhD, Mathematics 2015
University of Iowa *Department of Mathematics*
PhD Thesis: "*Convex Decomposition Techniques Applied to Handlebodies*"
Advisor: Keiko Kawamuro

Graduate Certificate in College Teaching 2014
University of Iowa *Graduate College*

Masters, Mathematics 2012
University of Iowa *Department of Mathematics*

B.Sc., Mathematics 2009
State University of New York at Buffalo *Department of Mathematics*
Honors: *Summa Cum Laude*
Honors Advisor: Professor William Menasco

B.A., Psychology 2004
University of North Carolina at Wilmington *Department of Psychology*

EMPLOYMENT

Instructor of Mathematics 2018 – present
Colorado Mesa University, Grand Junction, CO
Resposibilities include teaching, participating in curriculum development and mentoring advanced student projects.
Courses taught: College Algebra, Precalculus, Calculus I, II, and III, Linear Algebra, Differential Equations, and Discrete Mathematics

Visiting Assistant Professor 2015-2018
Grinnell College, Grinnell, IA
Resposibilities include teaching, participating in curriculum development and mentoring advanced student projects.
Courses taught: Functions and Differential Calculus, Functions and Integral Calculus, Calculus 2, Linear Algebra, Number Theory, Topology, Abstract Algebra, and Mentored Advance Projects

MACHINE LEARNING AND DATA SCIENCE

To help build my foundation in data science, I have completed several certifications:

Machine Learning Specialization July 2023
DeepLearning.AI & Stanford University via Coursera

Unsupervised Learning, Recommenders, Reinforcement Learning July 2023
DeepLearning.AI & Stanford University via Coursera

Advanced Learning Algorithms June 2023
DeepLearning.AI & Stanford University via Coursera

Supervised Machine Learning: Regression and Classification May 2023
DeepLearning.AI & Stanford University via Coursera

Through the coursework accompanying these certificates I developed familiarity with many fundamental concepts and machine learning tools, including:

- Using popular machine learning libraries like NumPy, scikit-learn, Tensorflow, and keras
- Building and training supervised machine learning models for prediction and binary classification tasks, including linear regression and logistic regression
- Supervised learning (multiple linear regression, logistic regression, neural networks, and decision trees)
- Unsupervised learning (clustering, dimensionality reduction, recommender systems),

- Best practices for artificial intelligence and machine learning innovation (evaluating and tuning models, taking a data-centric approach to improving performance)

Beyond these certificates I have practiced implementing these tools on publicly available data sets, as well as in completing freely available coursework on applications of machine learning.

SKILLS

Mathematics: Research, Topology, Contact Toplogy, Topological Data Analysis, Experimental Mathematics
Programming: python (most proficient), Mathematica, MATLAB, C/C++, java, SQL, R
Python Libraries: numpy, scipy, matplotlib, seaborn, pandas, tensorflow, keras, scikit-learn
Other: Technical writing, LaTeX

PROFESSIONAL DEVELOPMENT - TEACHING

SIMIODE and the Mathematical Association of America 2023
OPEN MATH Workshop
SIMIODE stands for Systemic Initiative for Modeling Investigations and Opportunities with Differential Equations. The focus of this workshop was developing and presenting materials aimed at teaching differential equations using modeling and technology upfront and throughout the learning process.

American Mathematical Society - Project NExT 2017-2018
Workshop Fellowship
Project NExT is a selective teaching workshop for recent PhDs. As part of this cohort I participated in a number of workshops and special sessions, including: "Teaching Math to Future Teachers", "Interactive Teaching Methods","Fostering Engagement in Abstract Algebra", "Helping Students Learn to Write Proofs", "Rising to the Challenge of Diversifying the Mathematics Community", "Research Based Strategies for Reducing Stereotype Threat and Fostering Learning and Engagement in Math", "Teaching Real Analysis - An Active Approach"

American Mathematical Society - JMM 2016
Minicourse: "Directing Undergraduate Research"

American Mathematical Society - JMM 2016
Minicourse: "Increasing student engagement and understanding through active learning strategies in calculus"

American Mathematical Society - JMM 2011
Minicourse: "Getting students involved in undergraduate research"

GRADUATE RESEARCH ACTIVITIES

University of Iowa March 2015
Thesis Defense : "Convex Decomposition Techniques Applied to Handlebodies"
Committee: K. Kawamuro, B. Cooper, H. Fang, C. Frohman, M. Tomova

U.S.T.A.R.S at Berkeley Spring 2015
Research Presentation: "Using convex surfaces to find a bound on tight contact structures supported by thickened surfaces"

Wartburg College Mathematics Seminar Spring 2015
Invited Talk : "Classifying Mathematical Objects"

University of Iowa Graduate and Undergraduate Student Seminar Fall 2013
Research Presentation : "Using convex surface theory to classify contact structures on some 3-manifolds"

University of Iowa Graduate and Undergraduate Student Seminar Spring 2013
Research Presentation : "An introduction to convex surface theory"

U.S.T.A.R.S at Purdue University Spring 2013
Research Presentation: "Results in Classifying Tight Contact Structures"

University of Iowa Fall 2012
Comprehensive Exam : "Results in the Classification of Contact Structures on 3-manifolds"
Committee: K. Kawamuro, H. Fang, C. Frohman, D. Lafountain, M. Tomova

University of Iowa 2013-2015
Regular Speaker: Topology Research Group Seminar

University of Iowa 2011-2015
Organizer and Regular Speaker: Graduate Student Topology Seminar

State University of New York at Buffalo Spring 2009
Undergraduate Honors Thesis Defense: "Classification of Surfaces and Assigning Hyperbolic Metrics"

Advisor: Dr. William Menasco

MSRI-UP at the Mathematical Sciences Research Institute Summer 2008

R.E.U. Original Research Presentation: "Exploring a Rational Landen Transformation of Degree Eight"

Advisor: Dr. Victor Moll

Collaborators: Ricela Feliciano-Semidei, Jason Rosenberg, Kevin Wingfield

CONFERENCES ATTENDED

- MathFest 2017
- JMM 2008, 2010, 2011, 2012, 2013, 2014, 2016, 2018
- Texas Geometry and Topology Conference, UT Austin, 2011, 2014
- Combinatorial Link Homology Theories, Braids, and Contact Geometry, ICERM, 2014
- USTARS, UC Berkeley, 2014
- Tech Topolgy Conference, GA Tech, 2011, 2012, 2013
- AMS Secional Meeting, Washington University, 2013
- USTARS, Purdue 2013
- Redbud Topology Conference, Univeristy of Arkansas, 2013
- Topology Students Workshop, UGA, 2012
- SACNAS 2008 (including REU Research Poster Presentation)
- Joint Mathematics Meetings 2008 (including REU Research Poster Presentation)