CURRICULUM VITAE - JOEL WALSH

CONTACT

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RESEARCH INTERESTS

Educational Technology, Natural Language Processing, Knowledge Representation, Teacher Education, Machine Learning/Data Mining and Learning Analytics, Computer Science Education.

EDUCATION

University of Texas-Austin (2016- Fall 2022) Phd candidate, Curriculum and Instruction-STEM Education Advisor: Dr. Catherine Riegle-Crumb

University of Texas-Austin (2019 - May 2022) M.S., Computational Science, Engineering, and Mathematics
Report: " Using Relation Extraction to Identify Launch States of Anthropogenic Space Objects". Advisor: Dr. Moriba Jah

University of California-Los Angeles (2012) M Ed. and Preliminary Credential- Secondary Mathematics

University of California-Davis (2008) BA, Political Science, (2008)

SELECTED COURSEWORK

Statistical Methods I and II, Machine Learning, Statistical Learning, Probability, Mathematical Statistics, Regression Analysis, Social Network Analysis, Bayesian Statistical Methods, Scientific Computing I and II, Computational Linguistics, Natural Language Processing, Design and Analysis of Experiments.

HONORS AND AWARDS

Recipient- Graduate Student Recruitment Fellowship, (2016-2018)

Recipient- Graduate Student Continuing Fellowship, (2021-2022)

WORK EXPERIENCE

Privateer Space (Sep 2022- Present)
Software Engineer
Duties: Building and experiment tracking for edge-based machine learning models

Finetune Learning (incoming: May 2022- Aug 2022)
AI research Intern
Duties: Working on NLP-based assessment tools

MathAction (May 2021 - present):
Consultant - Data Science Curriculum-Responsible for proposal generation and design, as part of a Lucas Foundation Project Based Learning Design Sprint

University of Texas at Austin (January 2020 - June 2020):
Instructor - Mathematics 175T Computer Science Pathways Part of a Computer Science "micro- credential" for undergraduate math and science majors. Focused on pedagogical content knowledge, multiple representations, computational thinking, and project based-learning.

Teaching Assistant- UTeach program(Austin, TX) (Spring 2017-present) Duties: Assisting student service teachers with lesson planning, data management, and classroom teaching

Graduate Research Assistant: Texas Advanced Computing Center - Applied Research Laboratories (Austin, TX) (Spring 2019- present)
Duties: Creating Quantum Computing curriculum for high schools students in the Canvas Learning management system. To include: Python and mathematics tutorials via Jupyter notebooks

Graduate Research Assistant: Inquiry Based Learning- Department of Mathematics (Austin, TX)(Spring 2017)
Duties: Provide support in Integral Calculus for a student intervention population while also conducting quantitative and qualitative research. Part of an initiative to serve the Discovery Scholars, a group of students in the school of undergraduate studies who have been identified as potentially taking more than five years to graduate.

Teaching Assistant- Differential Calculus w/ Effective Thinking, Integral Calculus,

Differential Calculus for Science (Austin, TX) (Spring 2017-Fall 2018) Duties: Course planning and design, collaboration with mathematics professors, TAs,and learning center support staff.

USC Hybrid High School:
-Blended Learning Mathematics instructor (Los Angeles, CA) (2014-2016) Duties: Digital curriculum creation and implementation

Locke High School: -Mathematics instructor (Los Angeles, CA) (2011-2014) Duties: Mathematics instruction. Courses taught: Algebra 2, Precalculus, Trigonometry, and Integrated Mathematics

PRESENTATIONS/ CONFERENCES

"Math and Science as a Critical Lens". Presented at the Free Minds, Free People conference, Chicago, IL (July 2014)

"Payday Loans and Predatory Lending: Investigating Using Technology in an Algebra 2 Classroom". Presented at the Creating Balance in an Unjust World Conference on Math Education and Social Justice, San Francisco, CA. (January 2016)

"Let's Grow a Generation of Data Natives". Presented at UT Austin TEDx conference, (April 2019)

"Machine Learning Bias: Examining Pretrial Risk Assessment Algorithms" Presented at the Creating Balance in an Unjust World Conference on Math Education and Social Justice, Honolulu, HI. (January 2019)

National Council of Teachers of Mathematics - 2021 Dallas Regional Planning Committee. Duties: Planning and review of submitted proposals.

"The Quantum Computing Project". Presented at the MIT Connected Ed conference (virtual), (July 2021).

" Automated Extraction of Knowledge Graphs from Science Content Standards ". Presented at the NBME NLP in Assessment Conference. (November 2021)

" Lesson Plan Generation using Natural Language Processing: Prompting Best Practices with OpenAI's GPT-3 model". AERA Annual meeting. (April 2022)

SERVICE/CAMPUS ORGANIZATIONS

Founder (Fall 2017-present)
Dinner with Sixteen Longhorns- Biannual event bringing together representatives of 16 student organizations.

Founder/President (Spring 2018-present)
LAMDA@edu: Student group (School of Education) focused on Learning Analytics, Machine learning/Data Mining, and Artificial Intelligence.

Expert Declaration (volunteer)
Rio Grande Legal Aid (2020)
Provided expert declaration predicting the spread of COVID in federal detention centers for asylum seekers from existing time series data.

Vaccine cold chain analysis (volunteer)
S and S Project Management (Myanmar) (2019-2020)
Provided hierarchical modeling and data analysis, analyzing vaccine cold chains spanning Yangon to the Putao region of Myanmar.

Website and Data Visualization consultant (volunteer)
Memphis Tenant's Union (2021-present)
Built website and created documentation so that member's of the tenant union can add their own visualizations to the site.

PUBLICATIONS

"The Effective Thinking Calculus Project". Starbird, M., Wolesensky, W., Walsh, J., Miller, B. and Chahin, T. (in press, 2022) MAA Notes Volume on Diverse, Equitable, and Inclusive Issues in Calculus Programs. arxiv link

"Piloting a Full-year, Optics-based High School Course on Quantum Computing". (2022) Physics Education. Walsh, J., Fenech, M., Tucker, D., Riegle-Crumb, C., and La Cour, Brian. arxiv link