

Thomas Manzini

Email: Tom.M@nzini.com Website: www.nzini.com Cell: [702-324-4319](tel:702-324-4319)

EDUCATION

Texas A&M University, College Station, TX

PhD - ML & Robotics for Disaster Response, Advisor Dr. Robin Murphy, In Progress

Honors: Graduate Research Fellowship - Awarded full tuition coverage & monthly stipend (2022 - present)

Carnegie Mellon University, Pittsburgh, PA

MS - Language Technologies & Computer Science, 2018

Honors: Graduate Research Fellowship - Awarded full tuition coverage & monthly stipend (2016 - 2018)

Rensselaer Polytechnic Institute, Troy, NY

BS, Computer Science, *Cum Laude*, 2016

Honors: Stanley I. Landgraff '46 Award - Excellence in leadership and academic achievement (2016)

Upsilon Pi Epsilon Computer Science Honor Society (2014 - 2016)

Phalanx Senior Leadership Honor Society (2015 - 2016)

Dean's List (2012, 2013, 2014, 2015, 2016)

Rensselaer Leadership Award & Scholarship (2012 - 2016)

CONFERENCE PUBLICATIONS

Manzini & Lim, et al. "Black is to Criminal as Caucasian is to Police: Detecting, Evaluating and Removing Multi-Class Bias in Word Embeddings". NAACL '19. Proceedings of the North American Chapter of the Association for Computational Linguistics. June 2019. **(Oral)**

Pham, Liang, **Manzini**, et al. "Found in Translation: Learning Robust Joint Representations by Cyclic Translations Between Modalities". AACL '19. Proceedings of the 33rd conference of the Association for the Advancement of Artificial Intelligence. February 2019. **(Poster)**

Manzini et al. "Toward Improving the Intelligibility of Black-Box Speech Synthesizers in Noise". *SPECOM '18*. Proceedings of the 20th conference on Speech and Computer. September 2018. **(Oral)**

Prabhumoye, Botros, Chandu, Choudhary, Keni, Malaviya, **Manzini** et al. "Building CMU Magnus from User Feedback". *Alexa Prize '17*. In AWS re:INVENT 2017. November 2017. **(Paper)**

Manzini & Ravichander et al. "How Would You Say It? Eliciting Lexically Diverse Dialogue for Supervised Semantic Parsing". *SIGdial '17*. Proceedings of the 18th SIGdial Conference. August 2017. **(Poster)**

WORKSHOP PUBLICATIONS

Manzini, Shao, Mantravadi, Buendia, Knoertzer, et al. "Examination and Extension of Strategies for Improving Personalized Language Modeling via Interpolation" Proceedings of the 58th conference of the Association of Computational Linguistics, Workshop on Natural Language Interfaces. July 2020. **(Oral)**

Pham, Liang, **Manzini**, et al. "Learning Robust Joint Representations for Multimodal Sentiment Analysis". NeurIPS 2018 Workshop on Interpretability and Robustness in Audio, Speech & Language. December 2018. **(Oral)**

Manzini, Chandu & Singh. "Language Informed Modeling of Code-Switched Text". *ACL '18*. Proceedings of the 56th conference of the Association of Computational Linguistics, Workshop on Computational Approaches to Linguistic Code-switching. July 2018. **(Poster)**

Manzini & Pham, et al. "Seq2Seq2Sentiment: Multimodal Sequence to Sequence Models for Sentiment Analysis". *ACL '18*. Proceedings of the 56th conference of the Association of Computational Linguistics, Workshop on Human Multimodal Language. July 2018. **(Oral)**

JOURNAL PUBLICATIONS

Manzini et al. "A Play on Words: Using Cognitive Computing as a Basis for AI Solvers in Word Puzzles". *Journal of Artificial General Intelligence*. Volume 6, Issue 1, Pages 111–129, December 2015. **(Paper)**

TECHNICAL REPORTS

Manzini & McLeod. "Asynchronous Evolutionary Neural Architecture Search". Microsoft MLADS Spring '19. June 2019. Microsoft Internal Publication. **(Poster)**

EMPLOYMENT

Microsoft, Cambridge, MA

Machine Learning Scientist II – Office Docs (Spring 2020 - Spring 2022)

- Developing, and deploying machine learning models for change summarization in word documents
- Developing machine learning tools to support collaboration in Microsoft Office

Machine Learning Scientist – Office Docs (Spring 2020)

- Led machine learning infrastructure and modeling efforts for a team of multiple engineers and scientists working on summarizing changes in word documents
- Developed, deployed, and evaluated crowdsourcing experiments for multiple data annotation tasks.

Software Engineer, Microsoft AI Development Acceleration Program (2018 - 2020)

- Developed infrastructure for training personalized language models for users in Microsoft Outlook.
- Trained deep multimodal neural models for user and task modeling in Microsoft Office.
- Devised and deployed novel Neural Architecture Search methods for deep learning models.

Pinterest, San Francisco, CA

Intern – Software Engineer, Ads Ranking/Billing Team (summer 2016)

- Developed an automated data workflow for processing large scale advertiser refunds.

LinkedIn, Mountain View, CA

Intern – Software Engineer, Digits – Growth and Lifecycle Team (summer 2015)

- Developed parallelized mapping function to link LinkedIn user names to phone numbers

Bloomberg L.P., New York, NY

Consultant – Software Engineer, Fixed Income & Relative Value/Search Team (fall 2014 - spring 2015)

- Invited to become part-time consultant to continue work following summer internship.

Intern – Software Engineer, Fixed Income & Relative Value/Search Team (summer 2014)

- Developed Advanced Data Analysis, a query driven pivot table toolset for performing group-bys and aggregations on all fixed income securities using Python and Cython.

Hover Inc., Los Altos, CA

Intern – Software Engineer, Prometheus Project (summer 2013)

- Developed and maintained various computer vision techniques for pointcloud and mesh visualization.

MGM Resorts International, Las Vegas, NV

Intern – Software Engineer, Multi-Media Department (summer 2012)

Microsoft Innovation Center/Linq360, Las Vegas, NV

Intern – Information Technology Department (summer 2011)

DISASTER RESPONSE TECHNOLOGY PROJECTS

Emergency Integrated Life Saving Lanyard (EMILY), Texas A&M University, (2022 - present)

- Human Factors Modeling, Control/UX/UI Development

Teams For Emergency Operations Centers, Microsoft (2020 - 2021)

- Consultant for the use of the Microsoft Teams as platform for virtual emergency operations centers

World Health Organization COVID-19 Hospital Readiness Monitoring (2020 - 2021)

- Supported development of data collection platform to monitor hospital readiness.

Centers For Disease Control COVID-19 School Closure Detection, Microsoft Disaster Response (2020)

- Led machine learning modeling efforts to automatically detect school closure announcements to support public health monitoring
- Developed, deployed, and evaluated crowdsourcing labeling tasks to support this system.
- Developed training materials and instructed operators on how to interpret generated results.

Centers For Disease Control COVID-19 Health Statistics Collection, Microsoft Disaster Response (2020)

- Drove development of an automated information extraction system to collect statistics and information to support the CDC's COVID-19 task force.
- Deployed system has received daily use during the COVID-19 pandemic.

Improving the Intelligibility of Black-Box Speech Synthesizers in Noise, Carnegie Mellon University (2018)

- Developed machine learning models to predict intelligibility of synthetic speech under noisy conditions associated with emergency response.
- Work published in SPECOM 2018

RESEARCH PROJECTS & GROUPS

Emergency Integrated Life Saving Lanyard (EMILY) (2022 - present)

PI: Robin Murphy, Texas A&M University

- Human Factors Modeling, Control/UX/UI Development

Boeing: Smart Fault Isolation Manual (2017 - 2018)

PI: Eric Nyberg & Matthias Grabmair, Carnegie Mellon University – Language Technologies Institute

- Constructed Question Answering pipeline to recommend repair procedures based on queries.
- Trained sequence to sequence models for maintenance action recommendations in Boeing 787s.
- Mentored Boeing AI Development team (AIMS) members on best practices for search, question answering, and information retrieval systems.

DARPA: Data Driven Discovery of Models (D3M) (summer 2017)

PI: Eric Nyberg & Matthias Grabmair, Carnegie Mellon University – Language Technologies Institute

- Constructed dialog system for interaction with datasets through speech and data visualizations.

Bosch: Ubiquitous Personal Assistant (2016 - 2017)

PI: Eric Nyberg & Matthias Grabmair, Carnegie Mellon University – Language Technologies Institute

- Constructed a semantic parsing methodology for the development of a ubiquitous dialog agent spanning multiple smart home appliances.

Amazon Alexa Prize Team: CMU Magnus (2016 - 2017)

PI: Alan Black, Carnegie Mellon University – Language Technologies Institute

- Developed a social chatbot to engage users on Amazon's *Alexa* platform using dialog state transition models, and community question answering systems.

Syllabub (2015 - 2016)

PI: James Hendler, Rensselaer Polytechnic Institute – Computer Science Department

- Proposed, researched, and presented novel work involving using the *IBM Watson* pipeline and natural language processing to solve clues from Syllacrostic puzzles with >95% accuracy.

RPI Social Robotics (2013 - 2014)

PI: Mei Si, Rensselaer Polytechnic Institute – Cognitive Science Department

- Developed an interactive dialogue driven campus tour guide for use around the RPI Campus
- System deployed on a *RoboKind Zeno* robot.

Classroom Salon (summer 2011)

PI: Ananda Gunawardena, Carnegie Mellon University – School of Computer Science

- Developed prototype app for the classroom salon research project for studying classroom collaboration.

TEACHING & INSTRUCTION

Microsoft New England Research and Development Center, Cambridge, MA

Microsoft AI Development Acceleration Program (2019) - *Onboarding Organizer FY20*

- Developed and managed onboarding curriculum for over 35 new hires involving machine learning, data science, and software engineering, and team organization topics.

Carnegie Mellon University, Pittsburgh, PA

Introduction to Deep Learning (2018) - *Graduate Teaching Assistant*

- Provided multiple guest lectures on various topics related to deep learning and mentored numerous student projects (of which some resulted in publications) through office hours and individual meetings

Rensselaer Polytechnic Institute, Troy, NY

RPI Science Ambassadors (2013 - 2016) - *Science Ambassador*

- Traveled to local area middle and high schools giving hands on presentations on STEM Topics.

Introduction to Computer Science (2016) - *Undergraduate Teaching Assistant*

Introduction to Algorithms (2013 - 2014) - *Undergraduate Teaching Assistant*

Introduction to Open-Source Software (2015 - 2016) - *Undergraduate Teaching Assistant*

OPERATIONAL EXPERIENCE

Newton Fire Department, Newton, NH (2021-2022)

Respond to 911 calls in the town of Newton NH including fire and medical incidents

Edgewood Fire Department, Pittsburgh, PA (2017-2018)

Respond to 911 calls in the Edgewood borough of Pittsburgh including fire, medical, & HazMat incidents

Carnegie Mellon University Emergency Medical Services, Pittsburgh, PA (2016-present)

Respond to medical emergency calls throughout the CMU Campus and the surrounding area

Rensselaer Polytechnic Institute Ambulance, Troy, NY (2012-2016)

Positions Held: Captain (Elected 2014-2016), Training Committee Chair (2014), Scheduling Coordinator (2012)

Ranks achieved: Crew Chief (Trainer), Driver (Trainer), Event EMS Supervisor, Duty Supervisor, EMT-B

Supervised daily EMS response for the entire RPI Campus & Mutual Aid Service to surrounding communities

Supervised EMS response for numerous sporting, music, & community events with attendances >1000

ACADEMIC SERVICE

Reviewer, Natural Language Processing for Personal Impact at ACL'21 (Spring 2021)

Member, CMU Masters Experience Council – School of Computer Science (2017 - 2018)

Member, CMU Dean's Masters Advisory Council – School of Computer Science (2016 - 2018)

Co-Founder, RPI Science Undergraduate Council (2015 - 2016)

President, Upsilon Pi Epsilon Computer Science Honor Society, New York Eta Chapter (2015 - 2016)

CERTIFICATIONS

FAA Private Pilot, Instrument Rated, Airplane Single Engine Land, Complex Endorsement (2020 - ongoing)

FAA Drone Pilot, Part 107 (2022 - ongoing)

National Registry Advanced Emergency Medical Technician (2020-2023)

Fire Fighter 1 Pro-Board, NFPA 1001, Certification (2017 - ongoing)

PA Hazardous Materials Technician Certification (2018 - ongoing)

NAUI Rescue SCUBA Diver (2018 - ongoing)

AHA CPR for Basic Life Support for Healthcare Providers (2012 - 2023)

LANGUAGES & SOFTWARE

Languages:

Human: English (Native), Spanish (Basic working proficiency)

Computer: Python, Cython, Scope, C#, SQL, Java, Typescript, C++, C, Matlab, Javascript, HTML, CSS

Software:

Machine Learning: PyTorch, Keras, Tensorflow, Horovod, Parasail, Scikit-Learn, PyBrain

Distributed Computing: MPI, mpi4py, Apache Hadoop, Apache Spark, Apache Hive, Apache Pig

Software Development: Git, Visual Studio, IntelliJ, Azure Devops, Atlassian Jira

Publishing: LATEX, Overleaf, ShareTex, Adobe Photoshop, GIMP, Adobe Lightroom, DxO Nik Collection

Documentation: Sphinx, JavaDocs