Mandy B. Korpusik

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EDUCATION

2019	Ph.D. in ELECTRICAL ENGINEERING AND COMPUTER SCIENCE Massachusetts Institute of Technology, Cambridge, MA
2015	S.M. in ELECTRICAL ENGINEERING AND COMPUTER SCIENCE Massachusetts Institute of Technology, Cambridge, MA
2013	B. S. in ELECTRICAL AND COMPUTER ENGINEERING Franklin W. Olin College of Engineering, Needham, MA

GRANTS

2024	$50,000 Interdisciplinary Grant, LMU, Seaver College of Science & Eng.
2023	$100,000 Research Gift, eBay
2023	$256,000 SBIR Phase I, NSF
2023	Continuing Faculty Grant, LMU, Seaver College of Science & Eng.
2023	Academic Technology Grant, LMU
2022	$50,000 Research Gift, eBay
2022	Faith & Justice Research Grant, LMU
2021	Capacity Building Grant, LMU, University Intercultural Council
2021	Continuing Faculty Grant, LMU, Seaver College of Science & Eng.
2021	Faith & Justice Course Development Grant, LMU
2020	Faith & Justice Research Grant, LMU
2020	Course Development Grant, LMU, Seaver College of Science & Eng.

AWARDS

2024	Faculty Fellow, LMU Seaver College of Science and Engineering
2023	Faculty Fellow, LMU Center for Teaching Excellence
2022	Ascending Scholar Award, LMU
2021	Honorable Mentor Award, LMU Honors Program
2019	Paul L. Penfield Student Service Award, MIT EECS Department
2019	Semifinalist, MIT 100K Launch
2016	Service Award, Sidney Pacific Graduate Residence
2015	Fellowship, National Science and Engineering Graduate (NDSEG)
2015	Honorable Mention, NSF Graduate Research Fellowship
2014	Best Rated Poster Presentation Award: Demos, Spoken Language Technology Workshop (SLT), South Lake Tahoe

TEACHING EXPERIENCE

2020–Present	Instructor, Natural Language Processing, LMU
2019–Present	Instructor, Introduction to Computer Programming, LMU
2021–Present	Instructor, Machine Learning, LMU
2020–2021	Instructor, Programming Lab, LMU
2016	CS Instructor, Women's Technology Program, MIT
2016	Co-Instructor, IAP Speech and Language Processing Course, MIT
2015	Kaufman Teaching Certificate Program, MIT

Research Interests

My primary research interest is natural language processing and AI, especially applications of deep learning. In the nutrition space, I have used Transformer models to perform semantic tagging and mapping of natural language meal and exercise descriptions to semantically similar database entries. I also demonstrated that asking followup clarification questions with deep reinforcement learning boosts food recall by narrowing down the search space, and that multi-modal Transformers with language and vision inputs outperform models using only one modality. I am passionate about developing conversational agents for health and wellness that provide personalized recommendations.

Conference Proceedings

2023   *Multi-modal Food Classification in a Diet Tracking System with Spoken and Visual Inputs.* S. Gowda*, Y. Hu*, M. Korpusik. ICASSP. (* authors contributed equally)

2022   *Pacman Trainer: Classroom-Ready Deep Learning from Data to Deployment.* M. Kitamura, M. Korpusik, A. Forney. ASEE.

2022   *Impact of Late Policies on Submission Behavior and Grades in Computer Programming.* M. Korpusik, J. Freitas, J. Dionisio. ASEE.

2021   *A New Dataset for Natural Language Understanding of Exercise Logs in a Food and Fitness Spoken Dialogue System.* M. Epps, J. Uribe, M. Korpusik. SLT.

2019   *A Comparison of Deep Learning Methods for Language Understanding.* M. Korpusik, Z. Liu, J. Glass. Interspeech, Graz, Austria.

2019   *Dialogue State Tracking with Convolutional Semantic Taggers.* M. Korpusik, J. Glass. ICASSP.

2018   *Convolutional Neural Networks for Dialogue State Tracking without Pre-trained Word Vectors or Semantic Dictionaries.* M. Korpusik, J. Glass. SLT.

2018   *Convolutional Neural Networks and Multitask Strategies for Semantic Mapping of Natural Language Input to a Structured Database.* M. Korpusik, J. Glass. ICASSP.

2017   *Character-based Embedding Models and Reranking Strategies for Understanding Natural Language Meal Descriptions.* M. Korpusik, Z. Collins, J. Glass. Interspeech.

2017   *Semantic Mapping of Natural Language Input to Database Entries via Convolutional Neural Networks.* M. Korpusik, Z. Collins, J. Glass. ICASSP.

2016   *Distributional Semantics for Understanding Spoken Meal Descriptions.* M. Korpusik, C. Huang, M. Price, J. Glass. ICASSP.

2014   *Data Collection and Language Understanding of Food Descriptions.* M. Korpusik, N. Schmidt, J. Drexler, S. Cyphers, J. Glass. SLT.

Journal Articles

2021   *Use of Natural Spoken Language With Automated Mapping of Self-reported Food Intake to Food Composition Data for Low-Burden Real-time Dietary Assessment: Method Comparison Study.* S. Taylor*, M. Korpusik*, S. Das, C. Gilhooly, R. Simpson, J. Glass, S. Roberts. Journal of Medical Internet Research. (*authors contributed equally)

2019   *Deep Learning for Database Mapping and Asking Clarification Questions in Dialogue Systems.* M. Korpusik, J. Glass. IEEE Transactions on Audio, Speech and Language Processing (ASLP).

2017   *Spoken Language Understanding for a Nutrition Dialogue System.* M. Korpusik, J. Glass. IEEE ASLP.

Patents

2020	Korpusik, M. et al. A System and Method for Semantic Mapping of Natural Language Input to Database Entries via Convolutional Neural Networks. U.S. Patent 10817509.
2019	Korpusik, M. et al. Behavior Prediction on Social Media Using Neural Networks. U.S. Patent 10453099.

Workshops

2019	*A Food Logging System for iOS with Natural Spoken Language Meal Descriptions.* M. Korpusik, S. Taylor, S. Das, C. Gilhooly, S. Roberts, J. Glass. Nutrition 2019, Baltimore.
2019	*Testing the Validity of a Natural Spoken Language Application for the Self-monitoring of Daily Dietary Intake.* R. Silver, M. Korpusik, S. Taylor, S. Das, C. Gilhooly, J. Glass, S. Roberts. Nutrition 2019, Baltimore.
2019	*Convolutional Neural Encoder for the 7th Dialogue System Technology Challenge.* M. Korpusik, J. Glass. DSTC7 Workshop, Honolulu.
2016	*Recurrent Neural Networks for Customer Purchase Prediction on Twitter.* M. Korpusik, S. Sakaki, F. Chen, Y. Chen. CBRecSys, Boston.
2016	*Corpus for Customer Purchase Behavior Prediction in Social Media.* S. Sakaki, F. Chen, M. Korpusik, Y. Chen. LREC, Portoroz.

Invited Talks

2022	Tech Talk, eBay
2021	Keynote, NAACL workshop on trustworthy NLP, Mexico City, Mexico
2020	Colloquium, Harvey Mudd College, Claremont
2018	Talk, CMU, Pittsburgh
2017	Panel, Young Female Researchers in Speech Workshop, KTH, Sweden

Media Coverage

2023	*Food for Thought: Third place winners - Binary classification with pre-trained BERT*, Real World Data Science
2019	*Exploring the nature of intelligence*, Kim Martineau, MIT News
2019	*Inside AI*, Rob May, InsideAI Newsletter
2016	*Voice-controlled calorie counter*, Larry Hardesty, MIT News

Service and Leadership Activities

2023-2024	Chair, Computer Science Search Committee, LMU
2023-Present	Member, Seaver College DEI Committee, LMU
2022	Chair, Computer Science Culture and Climate Committee, LMU
2021	Project Kaleidoscope (PKAL) STEM Leadership Institute
2021	Organizer, ACL-IJCNLP Meta-learning for NLP Workshop, Bangkok
2021	Panel Reviewer, NSF
2015–Present	Venture Mentoring Service, MIT
2016–2019	Sandbox Program, MIT
2018	Rising Stars EECS Workshop, MIT
2018	MIT I-Corps Program, MIT
2016	Co-President, Graduate Women in EECS (GW6), MIT
2012	President, Society of Women Engineers (SWE), Olin College