BRENDAN KING

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EDUCATION

University of California, Santa Cruz   *Sept. 2021 - Present*
Ph.D. Candidate in Computer Science (Overall GPA: 4.00)
Advisor: Prof. Jeffrey Flanigan

University of Washington, Seattle   *June 2017*
B.S. in Computer Science (Overall GPA: 3.63)
Research Mentor: Prof. Yejin Choi

PUBLICATIONS

Unsupervised End-to-End Task-Oriented Dialogue with LLMs: The Power of the Noisy Channel. Brendan King and Jeffrey Flanigan. EMNLP 2024. [paper] [code]

Diverse Retrieval-Augmented In-Context Learning for Dialogue State Tracking. Brendan King and Jeffrey Flanigan. Findings of the ACL, 2023. [paper] [code]

In Search of the Lost Arch in Dialogue: A Dependency Dialogue Acts Corpus for Multi-Party Dialogues. *Second Author*. Findings of the ACL, 2025. [paper] [corpus & codebook]

Dependency Dialogue Acts — Annotation Scheme and Case Study. *Second Author*. International Workshop on Spoken Dialogue System Technology (IWSDS 2023). [paper]

ProbAnnoWeb and ProbAnnoPy: probabilistic annotation and gap-filling of metabolic reconstructions. *First Author*. Bioinformatics, 01 May 2018. [paper] [code]

Mighty Morphing Metabolic Models: Leveraging Manual Curations for Automatic Metabolic Reconstruction of Clades. *Second Author*. 5th Conference on Constraint-Based Reconstruction and Analysis (COBRA 2018).

RESEARCH AND WORK EXPERIENCE

Graduate Student Researcher & Teaching Assistant   September 2021 - Present
UC Santa Cruz & NSF National AI Institute for Student-AI Teaming (NSF iSAT)

· Developing novel methods for task oriented dialogues, including fully unsupervised task-oriented dialogue (EMNLP 2024), and retrieval-augmented in-context learning (Findings of the ACL, 2023).

· Developing methods for supporting a conversational AI partner in a classroom setting.

· Helping develop and annotate the Dependency Dialogue Acts (DDA) annotation scheme for modeling multi-party dialogue (IWSDS 2023) and the first DDA annotated corpus (Findings of the ACL, 2025). Our framework captures the semantic features of dialogue acts, the rhetorical relationships between acts, and the threaded nature of conversations. DDA is broadly applicable outside the classroom setting, and is particularly valuable to our needs in analyzing the learning process of a group in real time.

· Serving as a teaching assistant for courses in NLP at both undergraduate and graduate levels.

Software Development Engineer II   September 2017 - August 2021
Apptio, Inc. - Platform Shared Services

· Served as both technical and project lead on a service that coordinates automated end-to-end provisioning of all Apptio applications directly from purchase data in our CRM, reducing delivery time from days to minutes and cleaning up expired deployments. Constructed reliable, idempotent, asynchronous interfaces for provisioning activity and status reporting across stakeholders. Managed project requirements, priorities and timelines across organizations.

- Conceptualized and developed a 'batteries-included' library for interacting with our authentication service to more quickly and reliably onboard new applications into the suite.
- Led design and implementation of the feed service, which catalogs and serves available micro-frontends as part of an organization-wide effort to adopt micro-frontends using piral.io
- Served as the primary mentor for an engineering intern who joined as a full-time engineer.

Undergraduate Researcher
January - June 2017

UW Allen School of Computer Science & Engineering

- Completed a senior research project on natural language generation (NLG) and common-sense reasoning working with graduate students under guidance of Dr. Yejin Choi.
- Implemented and analyzed an attention-based RNN model for recipe generation: supervised translation of a list of ingredients and dish title into a natural language procedure for producing the dish.
- Conducted iterative experiments evaluating generation quality, diversity, and topic accuracy for various architectures, training and decoding methods.
- Explored reinforcement learning to augment cross-entropy loss training in improving generation quality.
- Reviewed literature on approaches to decoding text from neural language models and NLG evaluation.

Computational Research Intern
June 2015 - March 2017

Institute for Systems Biology
Prof. Nathan Price

- Engaged in primary research in constraint-based metabolic reconstruction and analysis.
- Implemented the probabilistic annotation algorithm and its application to probabilistic network gap-filling as a python package, published in *Bioinformatics*.
- Designed and implemented algorithms for metabolic model translation from one organism to a genetic relative with improved preservation of evidence-based reactions, presented at *COBRA 2018*.

TEACHING & GRADUATE COURSEWORK

Teaching (TA): Intro. Natural Language Processing (Spring '22, Spring '23), Adv. Machine Learning for NLP (Winter '23)

Courses: Natural Language Processing I-III, Machine Learning for NLP, Foundations of Data Science, Responsible Data Science, Intro. to Information Theory, Analysis of Algorithms, Computer Architecture, Research & Teaching

TECHNICAL STRENGTHS

Knowledge Areas:	NLP, Deep Learning, Machine Learning, Software Engineering, In-Context Learning, Dialogue State Tracking, Dialogue Understanding, Dialogue Annotation, Transfer Learning, Natural Language Generation, Computational Biology, Metabolic modeling, Constraint-based linear optimization, DevOps
Languages:	Python, Java, Typescript, Javascript, SQL, Bash, Lua, C, C++, Ruby
Tools & Frameworks:	PyTorch, Huggingface, sentence-transformers, FAISS, Dropwizard, Node.js, Docker, Kubernetes, Tensorflow Gitlab/Github CI/CD, Piral, Torch, FoalTS, React, Maven, Flask, jOOQ, Express.js
AWS:	EC2, RDS, ELB/ALB, ECS, SQS, SNS, StepFunctions, Lambda, S3, Cloudfront, Database Migration Service, Secret Management

REFERENCES

References are available upon request, please email me at bking2@ucsc.edu.