Nathan Kim

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EDUCATION

Stanford University **Stanford, CA**
BS, Computer Science *Expected June 2024*
GPA: 3.9
Key Coursework: NLP w. Deep Learning (Best Project), Machine Learning (Best Project), Deep Generative Models

RESEARCH

How Does Context Arise in Contextual Embeddings Geometry? **In Preparation**
Nathan Kim, Isabel Papadimitriou, Dan Jurafsky*
While the broad and expressive linguistic capabilities of large language models are widely attributed to the *contextualization* induced by encoder self-attention, a clear link between contextualization and the embedding space itself has yet to be precisely articulated. We find that embeddings can be clustered by linear context, although this arrangement does not encode higher-order linguistic structure.

GLARE: Infilling Language Models for Textual Adversarial Attacks **Eval4NLP @ AACL–IJCNLP 2022**
Nathan Kim, Ryan Chi*, Patrick Liu, Zander Lack, Ethan Chi*
Textual adversarial examples can expose serious security vulnerabilities in NLP models by illustrating where small perturbations in input texts can drastically alter their predictions. We find that the GPT-2 adapted to perform non-causal infilling (Donahue et al. 2020) outperforms existing adversarial example generation methods in fluency, semantic preservation and attack success rates.

WORK EXPERIENCE

Portalform (YCombinator W23) **January 2022—**
Founding Engineer
- Building a next-generation platform as a service to streamline the process of developing real-time data integrations for SaaS
- Designed/serviced a prototype service backed by Prisma already supplying Shopify order data to Oversee's storefront clients

Canal **June 2022—September 2022**
Frontend Engineering Intern
- Contributed **18.5% of frontend code** written at Canal during internship period, including **redesigned invite interface**
- **Initiated/designed major refactor** of Proposal screens and provided **key input on data model** for V2 Proposal system

PROJECTS & VOLUNTEER WORK

Stanford ACM **September 2021—June 2022**
Chair, MLab Reading Group
- **Constructed/taught 10-week curriculum** for tutorial series designed to expose beginner ML students @ Stanford to **major ideas at the foundations and forefronts of AI** research and build competencies in **finding & interpreting written research**
- Recruited Stanford undergraduate researchers to present to 100+ MLab students on ongoing work in NLP, CV & other topics

ArMol **September 2019—September 2020**
Creator/Co-founder/Lead Developer
- Developed cross-platform React Native mobile app which constructs models of molecular structures from user-input molecule names and displays the result in AR; published on the Google Play Store
- Developed server-side modelling pipeline for user-input molecules using structure data queried from PubChem API
- Designed a flush, modern frontend UI in Tachyons CSS

AWARDS
- Gold Medal Division, 2020 Asia Pacific Linguistics Olympiad
- Student Honor Roll, 2018 Canadian Computing Competition
- Silver Medalist, 2019 International Linguistics Olympiad

SKILLS
- Pytorch, Pandas, R, HTML/CSS. React.js, Flask, Node.js, Java, React Native, C++, Rust