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Akash Saravanan

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Work Experience

- **Graduate Research Fellow** — May 2021 - Present
  University of Alberta — *Edmonton, Canada*
  - **Meta Discovery for Game Balance**: Creating a reinforcement learning system to balance game characters.
  - **Debiasing Language Models**: Developed a framework, as a team of 3, to debias transformer models (BERT).
  - **Pixel Art Representation**: Designed the Pixel VQ-VAE, a computer vision model for learning pixel art embeddings. Further demonstrated its effectiveness in image generation & transformation.
  - **Tech Stack**: Python, PyTorch, Tensorflow, Transformers (HuggingFace)
- **Machine Learning Engineer** — Aug 2019 - Nov 2020
  Mad Street Den (Vue.ai) — *Chennai, India*
  - **Minimum Viable Product Team**: Trained several transformer models (BERT, DistilBERT, XLNet) for classification, entity extraction and language modeling. Developed a general purpose, config-driven framework for creating production-ready classification and named entity recognition models that allowed for rapid prototyping. Created an end-to-end proof-of-concept of the company's machine learning abilities on retail items.
  - **ML Team**: Designed, developed and deployed classification models on AWS and GCP. Upgraded existing systems using ML and boosted precision by 15%. Optimized the codebase and reduced overall latency by 40%.
  - **NLP Team**: Developed a Sequence-to-Sequence model to generate product descriptions. Created a named entity recognition system to identify key tags in catalog data using transformer models.
  - **Tech Stack**: Python, PyTorch, Tensorflow, Keras, Transformers (HuggingFace), AWS, GCP, Javascript
- **Engineering Intern** — May 2019 - Aug 2019
  Mad Street Den (Vue.ai) — *Chennai, India*
  - **NLP Team**: Extracted important keywords from 37 million retail products using a custom algorithm that combined NPMI and TF-IDF. Implemented Word2Vec over 2 million retail product descriptions.
  - **Tech Stack**: Python, PyTorch, AWS
- **Software Development Intern - Python** — Nov 2017 - Jan 2018
  CPC Diagnostics Pvt. Ltd. — *Chennai, India*
  - **Software Engineering Team**: Automated a paper-based patient management system by compiling data from multiple sources (medical instruments, databases) and mapping it to existing patients. Developed an analytical tool to process test data, identify anomalies, create graphs, & generate hematology reports for medical professionals.
  - **Tech Stack**: Python, SQLite

Education

- **University of Alberta** — Jan. 2021 – Dec. 2022 (Expected)
  Master of Science (Thesis) in Computing Science; CGPA: 3.75/4.0 — *Edmonton, Canada*
- **Anna University (Sri Venkateswara College of Engineering)** — Jun. 2015 – Apr. 2019
  Bachelor of Engineering in Computer Science and Engineering; First Class. — *Chennai, India*

Programming Skills

- **Languages & Databases**: Python, MySQL, SQLite, MongoDB, HTML, CSS, Javascript, Markdown, C, C++.
- **Frameworks & Libraries**: PyTorch, Tensorflow, Keras, Transformers (HuggingFace), NumPy, Pandas, scikit-learn.
- **Tools & Technologies**: Git, LaTeX, Amazon Web Services (AWS), Google Cloud Platform (GCP)

Publications

- **Pixel VQ-VAEs for Improved Pixel Art Representation**: First author. EXAG 2022.
- **FineDeb: A Debiased Finetuning Approach for Language Models**: Co-first author. Under review.
- **Natural Language Generation using GANs**: Undergraduate Thesis. Intra-Mural Funding Grant (INR 10,000).
- **Facial Emotion Recognition using Convolutional Neural Networks**: First author. AICV 2018.

Selected Projects

- **Homebrew Helper**: Developed & deployed a Discord bot for online role-playing games. (Python, MongoDB)