Rafael Felix, Ph.D.

Machine Learning

Adelaide, Australia

Australian citizen

My profile uniquely blends of **Machine Learning** research and **Full Stack** Software Engineering. With over **a decade** of international experience, I have contributed significantly to **top** machine learning **conferences,** led and mentor teams in developing **ML-driven SaaS products**. I led and successfully executed innovative projects in **computer vision, visual based question-answering systems**, and **large language models**. I excel in environments that marry academic rigour with practical business problem-solving.

Education

Ph.D. in Artificial Intelligence and Robotics
The University of Adelaide, Jun 2016 – Nov 2019

M.Sc. in Artificial Intelligence and Robotics
Mackenzie Presbyterian University, Jan 2013 – Jun 2015

Bachelor's degree in Computer and Information Science
MC State University, Jan 2007 – Jun 2011

Experience

Machine Learning Team Lead
Company: Amplified Intelligence, Australia, Apr 2022 – Mar 2024

- Led research on **Point of Gaze** (PoG), **depth estimation** and **structure from motion** (SfM), successfully integrating the research components into **3 different products**.
- Created **architectural design** of multiple **ML as SaaS products** through optimised AWS infrastructure, reducing the team's development cycle by 50%, **boosting team delivery**.
- **Collaborate** with **C-suite executives, product managers, data collection, and DevOps** teams to deliver state-of-the-art machine learning services, generating over **$1 million in recurrent** revenue.
- Research and development of **scalable predictive solution**, which successfully processed **millions of daily requests**, and significantly boosted operational efficiency and **90% of retention** rate enterprise API.
- **Mentor machine learning** and **data scientist** team members. Oriented C-suite and **authored documentation** for Research and Development **grants** in Australia, leading to the successful reimbursement of over $900K in 2023.

Applied Researcher, Research Fellow
Company: Australian Institute for Machine Learning, Australia, Jan 2020 – Apr 2022

- Conducted R&D on **multimodal** imagery and question-answering, integrating **computer vision** with **large-language models** for a leading provider, thus **boosting end-user productivity**.
- **Guided** a cross-functional team of researchers and software engineers on collaborative projects driving innovation and **aligning with** organisational objectives.

- Published and reviewed papers at **major conferences**, such as NeurIPS, ICML, CVPR, ACL, ECCV, AAAI, ICCV.
- Published two seminal papers on **cutting-edge multimodal applications**, garnering recognition in esteemed conferences.

Early Career Applied Researcher
Company: Australian Centre for Robotic Vision, Australia, Jun 2016 – Nov 2019

- Conducted transformative research on zero-shot learning across **computer vision and robotics**, developing and refining advanced deep learning models for practical deployment.
- Presented findings and contributions at top-tier Computer Vision conferences (e.g., ECCV), with **papers that rank among the top 10 most-cited** in zero-shot learning.
- Curated **two open-source GitHub** repositories focused on zero-shot learning in test phases, amassing **57 stars** and **22 forks**.

Junior Machine Learning Engineer
Company: Sincronica, Brazil, Jan 2013 – May 2015

- Undertook research and development for a **multi-modal application** aimed at identifying documents from financial institutions. Leveraged computer vision and natural language processing techniques to craft **innovative models**.
- Designed a computer vision system that efficiently processes **thousands of documents daily**, leading to significant human resource savings for the company.
- Engineered a computer vision system to automate document processing, achieving a **70% reduction in manual annotation workload** from thousands of documents processed daily.
- Authored a notable paper that made remarkable contributions to the field.

Skills

Programming & Tools: Python, C++, Java, PHP, R, SQL, Matlab, Docker, Kubernetes, GitHub, ECS, EC2, Flask, FastAPI, CodeArtifact, Lambda, Agile, Software Engineering, System Architecture, MLOps.
Model Architectures: CNNs (Convolutional Neural Networks), GANs (Generative Adversarial Networks), BERT, Transformers, CLIP, DNN (Deep Neural Networks), LSTM (Long Short-Term Memory), RNN (Recurrent Neural Networks).
Techniques & Applications: Transfer Learning, Generative and Discriminative Models, Gaze Estimation, Face Detection and Recognition, Zero-Shot Learning, and Multi-modal Data Integration.
Languages: Fluent in English and Portuguese, Intermediate Spanish.

Awards and Activities

2022 - Drums Award - Most Effective Use of AI/Machine Learning
2021 - SA Science Excellence in Science and Industry Collaboration
2021 - Technical Judge at VEX Robotics Competition Australian National Championships
2020 - Dean's Commendation for doctoral thesis excellence
2016 - Australian Research Council Scholarship
2018 - Best research poster Award, Australian Robotic Vision Symposium

Additional Information

Github: https://github.com/rfelixmg
LinkedIn:https://www.linkedin.com/in/rafafelixphd
Website: https://rafafelix.com
Publications: https://scholar.google.com.au/citations?user=nijDcmQAAAAJ&hl=en&oi=ao

Publications

[1] Garg, A., Nguyen, C., **Felix, R.**, Do, T.-T., & Carneiro, G. (2023). Pass peer-agreement based sample selection for training with noisy labels. In Arxiv preprint arxiv:2303.10802.

[2] Garg, A., **Felix, R**., Sherrah, J., Abbasnejad, E., & van den Hengel, A. (2023). Colour palette generative adversarial networks. In Submission for 2023.

[3] Hu, H., Chen, H., **Felix, R.**, Abbasnejad, E., & Lingqiao, L. (2022). Semi-supervised learning from a pre-trained model: The problem, the pitfall and a simple-but-effective solution. In Submission (2022).

[4] **Felix, R.**, Sherrah, J., Abbasnejad, E., & van den Hengel, A. (2021). Cross-modal visual question answering for remote sensing data. In Digital Image Computing: Techniques and Applications (DICTA), IEEE.

[5] **Felix, R.**, Sasdelli, M., Reid, I., & Carneiro, G. (2020). Augmentation network for generalised zero-shot learning. In Proceedings of the asian conference on computer vision (ACCV).

[6] **Felix, R.**, Harwood, B., Sasdelli, M., & Carneiro, G. (2019). Generalised zero-shot learning with domain classification in a joint semantic and visual space. In 2019 digital image computing: Techniques and applications (DICTA) (pp. 1–8). IEEE.

[7] **Felix, R.**, Sasdelli, M., Reid, I., & Carneiro, G. (2019). Multi-modal ensemble classification for generalised zero shot learning.

[8] **Felix, R.**, Reid, I., Carneiro, G. et al. (2018). Multi-modal cycle-consistent generalised zero-shot learning. In Proceedings of the European conference on computer vision (ECCV) (pp. 21–37).

[9] **Felix, R.**, da Silva, L. A., & de Castro, L. N. (2015). Thresholding the courtesy amount of Brazilian bank checks using a local methodology. In International conference on practical applications of agents and multi-agent systems (pp. 213–221). Springer.

References: Available upon request.