BEN CONRAD

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EDUCATION

University of Amsterdam Amsterdam, Netherlands
*Master of Science in Artificial Intelligence with Honors; **GPA: 8.5/10.0*** *September 2020 – August 2022*

Simon Fraser University Burnaby, Canada
*Bachelor of Science in Computer Science with Distinctions; **GPA: 3.99/4.33*** *September 2014 – May 2019*

WORK EXPERIENCE

Ellogon AI Amsterdam, Netherlands
Machine Learning Research Scientist Intern *May 2021 – June 2022*
- Led research initiatives on topics such as domain generalization and unsupervised pretraining to enhance the development of Ellogon's histopathology imaging products.

Jumio Montreal, Canada
Machine Learning Engineer Intern *February 2020 – August 2020*
- Developed a deep learning based synthetic data generation pipeline to accelerate the deployment of new products with little training data.
- Frequently utilized AWS services such as SageMaker, EC2, S3 and Spot Instances.

Simon Fraser University Burnaby, Canada
Undergraduate Research Assistant *May 2018 – August 2018*
- Researched belief contraction in description logics under the supervision of Dr. James Delgrande with funding from the Canadian NSERC.

SKILLS

Languages: Python, Matlab, Bash, R, Java, C, C++

Libraries: PyTorch, PyTorch Lightning, Huggingface, NumPy, Pandas, Scikit-learn, PyTest, OpenCV, Weights & Biases, Albumentations, Streamlit, Einops

Technologies: Linux, Vim, Slurm, Latex, Markdown, Git, Amazon Web Services

Selected Coursework: Machine Learning, Computer Vision, Natural Language Processing, Data Mining, Information Retrieval, Reinforcement Learning, Evolutionary Computing, Data Structures, Database Systems, Computer Graphics

PUBLICATIONS & PROJECTS

Two-Stage Seamless Text Erasing On Real-World Scene Images Paper ↗ || Poster ↗
ICIP 2021
- Proposes a text segmentation and inpainting pipeline and a novel training strategy to erase text from arbitrary images.
- Achieves an 82% preference rate on real-world images over the previous state-of-the-art in a human perceptual study while matching the performance on synthetic benchmarks.

Pseudo-label Guided Joint Point Region Image-level Contrastive Learning for Task-specific Pretraining Paper ↗ || Code ↗
Masters Thesis
- Introduces a multi-level contrastive pretraining algorithm that uses pseudo-labeled data to learn rich images representations on specialized datasets.
- When pretrained on histopathology data, models achieve up to a 37% relative improvement on nucleus segmentation tasks in few-shot regimens.

Style Match: Reducing the Scanner Induced Domain Gap in Mitosis Detection using Style Transfer Alignment Paper ↗ || Code ↗
- Proposes a style transfer model to align the color and textural features between whole slide images.
- When used as a pre-processing step, Style Match helps reduce the domain generalization gap on mitosis detection benchmarks by up to 65% over standard image pre-processing.

An Analysis of Packing in Generative Adversarial Networks   Paper ↗

- An empirical study on using packing discriminators to reduce mode collapse in generative adversarial networks.
- The study finds that packing improves mode coverage at the cost of a slower convergence rate making it less sample efficient than other mode collapse mitigation techniques.

Belief Contractions on Large Ontologies with Minimal Knowledge Loss   Paper ↗ ‖ Code ↗

NSERC Undergraduate Research Project

- Proposes a kernel belief contraction algorithm to remove facts from $\mathcal{EL}^{++}$ ontologies without any unnecessary knowledge loss.
- Provides formal proofs that guarantees the algorithm is valid and will terminate with minimal epistemic knowledge loss.

Machine Learning Paper Re-implementations

- Decoder Denoising Pretraining for Semantic Segmentation: Code ↗
- A simple efficient and scalable contrastive masked autoencoder for learning visual representations: Code ↗
- FlexiViT: One Model for All Patch Sizes: Code ↗
- A Unified View of Masked Image Modeling: Code ↗

Awards & Accomplishments

Canadian NSERC Undergraduate Research Bursary Recipient (2018)

Member of the Simon Fraser University Varsity Track and Field Team (2014-2019)

2017 GNAC Student Athlete Athletic Representative (Highest GPA within the conference)

4-time GNAC Student Athlete Academic All-conference

4-time Simon Fraser University President's Honor Roll

7-time Simon Fraser University Dean's Honor Roll