Mohammed Hamada Gasmallah

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EDUCATION

Master of Science **(Research-Based)** Computer Science **(3.98 GPA), Queen's University** **Sept 2018–May 2020**
Thesis: **Deep Learning in Video Object Detection**

- **Michael A. Jenkins Graduate Fellow (2018)**, a merit-based award to recognize outstanding academic achievement and research.

Bachelor of Computing **(Honours) Computer Science (3.6 GPA), Queen's University** **Sept 2014–Apr 2018**

WORK & RESEARCH EXPERIENCE

Animation R&D Programmer: Computer Vision, Rockstar Games, Oakville, ON **May 2021-Present**

- **Researched** modern deep learning-based computer vision animation solutions dealing with point cloud and mesh data.
- **Planned, developed and maintained** an on-premise compute cluster with ML Ops based services.
- **Researched and implemented** compute graph style operations for CPU runtime.
- **Created and maintained** a continuous integration pipeline for data processing and continuous model training.

Artificial Intelligence Task Force Lead, Kings Distributed Systems, Kingston, ON **Mar 2020-May2021**

- **Supervised,** and **led** a team of **4** software engineers and machine learning engineers to develop a variety of **machine learning solutions** such as **a computer vision model** for social distance estimation, and parallelizing **NLP models** during hyperparameter searching.
- **Wrote, prepared and led** three machine learning workshops with **over 40 students**.

Research Assistant, NAAIS-SIANA Labs, Kingston, ON **May 2018–Present**

- **Deep Reinforcement Learning for Agent Visualization**: Developed and collaborated on a **Deep Reinforcement learning** model using **-Learning, Variational Autoencoder and Transformer** techniques to learn to play Atari games and **generate visualizations** of the agent's goals during play using **OpenAI Gym and Tensorflow.**
- **Machine Learning Ops:** Modified, built and deployed **Docker containers** with environment requirements for **CUDA, CUDNN, Python** and other ML libraries. Modified model training using FP16 mixed-precision training leading to a **400% speedup**.

Research Assistant, Calian Contract With DRDC, Kingston, ON **May 2018–May 2020**

- **Deep Learning for Computer Vision in Video-based Object Detection Systems**: Developed a **deep learning** model utilizing state-of-the-art **video-based object detection** for Intelligence, Surveillance and Reconnaissance applications using **Python and OpenCV.**

PUBLICATIONS

- Alex Wojaczek, Regina-Veronicka Kalaydina, **Mohammed Gasmallah**, Farhana Zulkernine and Myron R. Szewczuk, "**Computer Vision for Detecting and Measuring Multicellular Tumor Spheroids of Prostate Cancer**" 2019 IEEE Symposium Series on Computational Intelligence (SSCI), China, 2019.
- **Gasmallah M**., Zulkernine F., Rivest F., Mousavi P., Sedghi A. (2019) **Fully End-To-End Super-Resolved Bone Age Estimation**. In: Meurs MJ., Rudzicz F. (eds) Advances in Artificial Intelligence. Canadian AI 2019. Lecture Notes in Computer Science, vol 11489. Springer, Cham. Presented May 2019 in Kingston Ontario
- **M. H. Gasmallah** and F. Zulkernine, "**Video Predictive Object Detector**," 2018 IEEE 9th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), Vancouver, BC, 2018, pp. 365-371. Presented November 2018 in Vancouver, BC

ADDITIONAL INFORMATION

- Other languages: **Intermediate French (spoken, written)**
- Libraries:
  - Airflow, ClearML, Detectron/Detectron2, Docker, Git, Jax, Kubernetes, Matplotlib, NumPy, OpenCV, Perforce, Pytorch, Tensorflow, Unity, Unreal, YOLO
- Programming Languages:
  - Bash, C/C++, C#, Haskell, Java, JavaScript, Julia, Prolog, Python