

# Mohammed Hamada Gasmallah

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## EDUCATION

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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)**

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

## WORK & RESEARCH EXPERIENCE

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**Lead Machine Learning Engineer**, Distributive Network, Kingston, ON **Sept 2022–Present**

- **Architected and implemented** a distributed ML inference solution using **ONNX**.
- **Engineered** a Conversational Retrieval Augmented chatbot as an on-prem solution.
- **Planned, deployed and maintained** multiple on-premise services using **Kubernetes**.

**ML Ops R&D Programmer - Part-Time Contractor**, Rockstar Games, Oakville, ON **Dec 2022–Present**

- **Debugged, implemented and extended** compute graph operations for runtime.
- **Researched and implemented** new ML Ops based services for heterogeneous workloads.

**Animation R&D Programmer: Computer Vision**, Rockstar Games, Oakville, ON **May 2021–Sept 2022**

- **Planned, developed and maintained** an on-premise cluster with **ML Ops** based services.
- **Researched and implemented** compute graph style operations for CPU runtime.
- **Created and supported** a CI pipeline for data processing and continuous model training.

**Artificial Intelligence Task Force Lead**, Distributive Network, Kingston, ON **Mar 2020–May 2021**

- **Supervised**, and **led** a team of machine learning engineers to develop various **ML solutions** such as a **computer vision model** for social distance estimation.
- **Wrote, prepared and led** three machine learning workshops with **over 40 students**.

**Research Assistant**, NAAIS-SIANA Labs, Kingston, ON **May 2018–May 2023**

- **Deep Reinforcement Learning for Agent Visualization**: Developed and collaborated on a Deep Reinforcement Learning model using **VAE and Transformer** techniques to learn to play and generate visualizations of the agent's goals using **OpenAI Gym** and **Tensorflow**.
- **Machine Learning Ops**: Modified, built and deployed containers for **CUDA, CUDNN, Python** and other ML libraries. Sped up model training using mixed-precision training leading to a **400% speedup**.

## PUBLICATIONS

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- **M. Gasmallah**, F. Rivest, F. Zulkernine, and M. Breton, "**Quantifying Path Smoothness in Video Object Tracking by Detection**," Proceedings of the Canadian Conference on Artificial Intelligence. PubPub, Jun. 05, 2023.
- Alex Wojaczek, Regina-Veronica 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

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