

# 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)**, 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

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

- **Developed and maintained** an on premise Kubernetes cluster with a variety of ML Ops based services such as **Airflow**, **Kubeflow**, **Triton**, and **ClearML**.
- **Researched and implemented** a variety of compute graph style operations.
- **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–May 2021

- **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 state-of-the-art **Q-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% speed up**.

**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

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- 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
- Programming Languages:
  - o Bash, C/C++, C#, Haskell, Java, JavaScript, Julia, Prolog, Python