Sadegh ALIAKBARIAN

Computer Vision and Machine Learning Researcher | PhD Student

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EDUCATION

~August 2020 – July 2016 | PhD, COMPUTER SCIENCE, The Australian National University
- **Thesis** : Deep Sequence Learning for Video Anticipation : From Deterministic to Stochastic
- **Supervisors** : Dr. Lars Petersson, Dr. Mathieu Salzmann, Dr. Basura Fernando, Prof. Stephen Gould

September 2013 – October 2009 | BSc, COMPUTER SOFTWARE ENGINEERING, Isfahan University of Technology
- **Thesis** : Machine Learning Techniques for Internet Traffic Classification
- **Supervisor** : Prof. Abdoreza Mirzaei

(RECENT) PROFESSIONAL EXPERIENCE

- July 2020 | Research Intern | Facebook, PITTSBURGH, PA, United States
- **Research area** : Working on Facebook's photorealistic telepresence project.
- Working on generative modeling of natural sequences of 3D human pose and shape.
- Internship did not continued further due to COVID-19 outbreak and border closure.

July 2020 – January 2020 | Research Intern | FiveAI, OXFORD, United Kingdom
(FiveAI is a UK-based self-driving startup. Five raised $41 million just in 2020.)
- **Research area** : Adversarial machine learning. Analysis of the robustness of neural networks under adaptive adversarial attacks.
- Building a robust classifier via learning the image representations in lower rank.
- Designing strong adaptive attacks to evaluate the robustness of the proposed classifier.

October 2018 – May 2018 | Research Intern | Qualcomm AI Research, AMSTERDAM, The Netherlands
- **Research area** : Sequence analysis for human intention forecasting via analysing motion.
- Building SotA deterministic human motion prediction.
- **Outcome** : Two US Patent submissions (one in final steps to be published, entitled *Predicting Subject Body Poses and Subject Movement Intent Using Probabilistic Generative Models.*

Now – November 2017 | Associate Researcher | Australian Centre for Robotic Vision (ACRV), CANBERRA, Australia
- **Research area** : Generative models, with the focus on VAEs and conditional VAEs. Also working on multiple object tracking in videos.
- Building SotA generative model to predict multiple plausible continuations of human motions.
- Building the state-of-the-art geometry-based online multiple object tracking.
- **Outcome** : SotA diverse human motion prediction model. SotA MOT. A CVPR 2020 paper and two ECCV 2020 submissions.

December 2019 – July 2016 | Research Assistant | Smart Vision Systems, CSIRO, CANBERRA, Australia
- **Research area** : Deep sequence learning for (stochastic and deterministic) video anticipation.
- Building a generative model that mitigates posterior collapse in conditional generative models.
- Building SotA action anticipation pipeline for general actions in videos.
- Creating a large-scale driving action anticipation dataset, covering diverse set of scenarios, weather conditions, daytimes, and locations, with realistic subset of annotations.
- **Outcome** : ACCV 2018 paper, ICCV 2017 paper.

March 2016 – June 2015 | Research Intern | National ICT Australia (NICTA), CANBERRA, Australia
- **Research area** : Urban scene semantic segmentation under various illuminations.
- Designing domain (daytime) invariant deep semantic segmentation network.
- Designing weakly-supervised semantic segmentation given only image/video-level tags.
- **Outcome** : An ECCV 2016 and a TPAMI papers (continuing collaboration resulted in ICCV 2017 and ECCV 2018 papers).

Skills

Programming	Python, familiar with C#, C++, and Matlab
Frameworks/Libraries	PyTorch, OpenCV, Unity3D, familiar with tf.Keras

Peer-Reviewed Publications

CVPR 2020	**S. Aliakbarian**, F. Saleh, M. Salzmann, L. Petersson, S. Gould, *A Stochastic Conditioning Scheme for Diverse Human Motion Prediction*
CVPR 2020	M. Shoeiby, A. Armin, **S. Aliakbarian**, S. Anwar, L. Petersson, *Mosaic Super-resolution via Sequential Feature Pyramid Networks* (Workshops)
WACV 2020	M. Shoeiby, L. Petersson, M. Armin, **S. Aliakbarian**, A. Robles-Kelly, *Super-resolved Chromatic Mapping of Snapshot Mosaic Image Sensors via a Texture Sensitive Residual Network*
TPAMI 2018	F. Saleh, **S. Aliakbarian**, M. Salzmann, L. Petersson, J. Alvarez, S. Gould, *Incorporating Network Built-in Priors in Weakly-supervised Semantic Segmentation*
ACCV 2018	**S. Aliakbarian**, F. Sadat Saleh, M. Salzmann, B. Fernando, L. Petersson, L. Andersson, *VIENA^2 : A Driving Anticipation Dataset*
ECCV 2018	F. Saleh, **S. Aliakbarian**, M. Salzmann, L. Petersson, J. Alvarez, *Effective Use of Synthetic Data for Urban Scene Semantic Segmentation*
ICCV 2017	**S. Aliakbaria**n, F. Sadat Saleh, M. Salzmann, B. Fernando, L. Petersson, L. Andersson, *Encouraging LSTMs to Anticipate Actions Very Early*
ICCV 2017	F. Saleh, **S. Aliakbarian**, M. Salzmann, L. Petersson, J. Alvarez, *Bringing Background into the Foreground : Making All Classes Equal in Weakly-supervised Video Semantic Segmentation*
ECCV 2016	F. Saleh, **S. Aliakbarian**, M. Salzmann, L. Petersson, J. Alvarez, S. Gould, *Built-in Foreground/Background Prior for Weakly-Supervised Semantic Segmentation*
IEEE PacRim 2013	**S. Aliakbarian**, F. Saleh, A.Fanian, TA. Gullivar, *Optimal supervised feature extraction in internet traffic classification*
ICEE 2013	**S. Aliakbarian**, A.Fanian, *Internet traffic classification using moea and online refinement in voting on ensemble methods*

Preprints

ArXiv 2019	**S. Aliakbarian**, F. Saleh, M. Salzmann, L. Petersson, *Sampling Good Latent Variables via CPP-VAEs : VAEs with Condition Posterior as Prior*
ArXiv 2020	F. Saleh, **S. Aliakbarian**, M. Salzmann, S. Gould, *ArTIST : Autoregressive Trajectory Inpainting and Scoring For Tracking*
ArXiv 2016	**S. Aliakbarian**, F. Saleh, B. Fernando, M. Salzmann, L. Petersson, *Deep Action- and Context-Aware Sequence Learning for Activity Recognition and Anticipation*

Grants, Honors and Awards

CVPR 2020	**Outstanding Reviewer Award**, CVPR 2020
Qualcomm Inc.	Recipient of €18K grant for R&D from Qualcomm AI Research, 2018
ANU/CSIRO	Recipient of full scholarship award from ANU of $94K, Australia, 2016
ANU	Recipient of travel grant award from ANU of $7K, Australia, 2016
CSIRO	Recipient of CSIRO Top-up Award of $35K, Australia, 2016
NICTA	Recipient of NICTA Project grant of $10K, Australia, 2016

Academic Activities

Talk	Talks on Variational Autoencoders, Normalizing Flows, and Adversarial ML at ANU CVRG Seminars.
Reviewer	TPAMI, CVPR18, CVPR19, CVPR20, ECCV18, ECCV20, ICCV19, AAAI20, ECCVW16, ECCVW18, ICIP17, ICIP18
Workshop	Program Committee of CVRSUAD 2019 at ICCV 2019, CVRSUAD 2018 at ECCV'18, CVRSUAD 2017 at ICCV'17
Lab Instructor	Python Programming for Scientists, Australian National University, 2017
Workshop	Deep Learning with Python and Keras, Data61, CSIRO, 2017
Tutor	Introduction to Programming, Algorithms and Data Structures, Software Engineering, IUT, 2012-2013

References

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