M. Sadegh ALIAKBARIAN

Computer Vision and Machine Learning Researcher | PhD Student

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Research areas of expertise and interest. Sequence learning and modeling, generative models and variational inference, adversarial examples/training, video understanding, multiple object tracking, human motion prediction.

EDUCATION

Now – July 2016 | **PhD in Computer Science | The Australian National University, CANBERRA, Australia**
- **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 | **B.Sc. in Computer Software Engineering | Isfahan University of Technology, ISFAHAN, Iran**
- **Thesis** : Machine Learning Techniques for Internet Traffic Classification
- **Supervisors** : Prof. Abdoreza Mirzaei

(RECENT) PROFESSIONAL EXPERIENCE

~July 2020 – January 2020 | **Research Intern | Five, OXFORD, United Kingdom**
(Five is a UK-based self-driving startup. Five raised $41 million just in 2020.)
- **Research area** : Analysis of discriminative neural networks in feature-space to to detect adversarial attacks. We may incorporate insights and/or techniques from generative models and representation learning into addressing adversarial vulnerability of discriminative classifiers.

PyTorch | Python | Adversarial Attacks | Adversarial Examples | Generative Models

October 2018 – May 2018 | **Research Intern | Qualcomm AI Research, AMSTERDAM, The Netherlands**
- **Research area** : Sequence analysis for human intention forecasting by 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.*

PyTorch | tf.Keras | Python | Sequence Learning | Docker

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 a generative model that mitigates posterior collapse in conditional generative models.
- **Outcome** : SotA diverse human motion prediction model. Two CVPR 2020 submissions and an ECCV 2020 submission.

PyTorch | Python | Generative Models | Variational Inference | Sequence Learning

Now – 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.

PyTorch | Python | Generative Models | Variational Inference | Sequence Learning

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).

tf.Keras | Torch | Lua | Python | Deep Learning

Skills

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

(Recent) Publications

ECCV 2020	S. Aliakbarian, F. Saleh, M. Salzmann, L. Petersson, *Better Motion Generation via Variational Autoencoders with Learned Conditional Priors* (Submitted)
ECCV 2020	F. Saleh, S. Aliakbarian, M. Salzmann, S. Gould, *ArTIST : Autoregressive Trajectory Inpainting and Scoring For Tracking* (Submitted)
CVPR 2020	S. Aliakbarian, F. Saleh, M. Salzmann, L. Petersson, S. Gould, A. Habibian, *A Stochastic Conditioning Scheme for Diverse Human Motion Prediction*
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 2019	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. Aliakbarian, 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*

Grants, Honors and Awards

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

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
T.A.	Introduction to Programming, Algorithms and Data Structures, Software Engineering, IUT, 2012-2013

References

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Prof. Stephen Gould
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