

Seyed Ali Osia

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- RESEARCH INTERESTS
- ◇ Privacy in Machine Learning: Information Theoretic Privacy, User Data Privacy, Cloud Privacy
 - ◇ Deep Learning: Information Theoretic Analysis, Regularization, Generalization, Generative Models
 - ◇ Probabilistic Machine Learning: Approximate Inference, Bayesian Nonparametric Models
- EDUCATION
- ◇ Sharif University of Technology, Tehran, IRAN. September 2014 - Now
Ph.D. Candidate in Computer Engineering - Artificial Intelligence, **Current GPA: 19.52/20**
Supervisor: Prof. Hamid R. Rabiee
Title of Ph.D. Proposal: *Deep Feature Extraction by Information Regularization*
Coursework: Machine Learning (19.9/20), Statistical Learning(20/20), Probabilistic Graphical Models(20/20), Stochastic Processes (20/20), Information Theory (18.7/20), Approximation Algorithms (20/20), Digital Image Processing (20/20), Neuroscience (19/20)
 - ◇ Sharif University of Technology, Tehran, IRAN. September 2010 - June 2014
B.Sc. in Computer Engineering - Software Engineering, **GPA: 18.14/20**
Thesis: *Human Body Pose Estimation by Using 3D Point Cloud*, 20/20
- HONORS AND AWARDS
- ◇ Awarded Fellowship of National Elite Foundation of Iran for, 2016-2019
 - ◇ Admitted as a **direct Ph.D. student** to Sharif University of Technology, 2014
 - ◇ Introduced as scientific elite by the National Elite Foundation of Iran, 2010
 - ◇ **Bronze Medal** in Iranian National Olympiad in Math, 2009
- PUBLICATION
- ◇ Seyed Ali Osia, Borzoo Rassouli, Hamed Haddadi, Hamid R Rabiee, Deniz Gndz, **Privacy Against Brute-Force Inference Attacks**, IEEE International Symposium on Information Theory (ISIT), July 2019. (Available on ArXiv)
 - ◇ Seyed Ali Osia, Ali Taheri, Ali Shahin Shamsabadi, Kleomenis Katevas, Hamed Haddadi, Hamid R. Rabiee, **Deep Private-Feature Extraction**, IEEE Transactions on Knowledge and Data Engineering, 2019, DOI: 10.1109/TKDE.2018.2878698. (Available on ArXiv, Code)
 - ◇ Seyed Ali Osia, Ali Shahin Shamsabadi, Ali Taheri, Hamid R. Rabiee, Hamed Haddadi, **Private and Scalable Personal Data Analytics Using Hybrid Edge-to-Cloud Deep Learning**, IEEE Computer, Special Issue on Mobile and Embedded Deep Learning, May 2018. (Paper)
 - ◇ Seyed Ali Osia, Ali Shahin Shamsabadi, Ali Taheri, Kleomenis Katevas, Sina Sajadmanesh, Hamid R. Rabiee, Nicholas D. Lane, Hamed Haddadi, **A Hybrid Deep Learning Architecture for Privacy-Preserving Mobile Analytics**, Available on ArXiv, March 2017(Paper, Code)
 - ◇ Sina Sajadmanesh, Sina Jafarzadeh, Seyed Ali Osia, Hamid R. Rabiee, Hamed Haddadi, Yelena Mejova, Mirco Musolesi, Emiliano De Cristofaro, Gianluca Stringhini, **Kissing Cuisines: Exploring Worldwide Culinary Habits on the Web**, 26th International World Wide Web conference, 3-7 April, 2017, Perth, Western Australia. Available on ArXiv, October 2016. (Paper, MIT Tech Review, Sciences et Avenir, France24, ReachMD, NEXO, Independent)
- RESEARCH EXPERIENCE
- ◇ **Information Theoretic Privacy** (2018-Now) We are working on the utility-privacy trade-off assuming that the adversary is a brute-force attacker. In this project I am collaborating with Prof. Borzoo Rassouli and Prof. Deniz Gündüz.
 - ◇ **Cell Profiling for Drug Discovery** (2018-Now) I am working with Mojtaba Bahrani on his M.Sc. thesis on batch effect removal for image based cell profiling, which can leads to efficient drug discovery.

- ◇ **Privacy-Feature Extraction** (2016-2018) In this work, we tried to address the privacy concern rises when an end-user interact with a cloud service which infer some knowledge by using a deployed deep model. In order to solve this problem, we proposed a hybrid user-cloud framework and a new feature extraction algorithm. In this project I am collaborating with Prof. Hamed Haddadi.
- ◇ **Databox** (2016) I collaborated with Prof. Hamed Haddadi and implemented two state of the art deep models (for face detection and face recognition) on Raspberry Pi and evaluate their efficiencies.
- ◇ **Storage Management** (2016) I collaborated with Prof. Hossein Asadi on a cache I/O behavior prediction project with recurrent neural networks.
- ◇ **Food Project** (2016) I implemented the deep models used in the Kissing Cuisines paper.
- ◇ **Multiple Generative RNNs** (2016) I worked with Ali Taheri on his M.Sc. thesis which was about sequence labeling with multiple generative RNNs with shared input and output.
- ◇ **Calcium Cell Imaging** (2015) I worked with Dr. Sara Pahlavan in Royan Institute and implemented a MATLAB tool for processing calcium cell imaging.
- ◇ **Spike Sorting** (2015) I collaborated with Dr. Morteza Moazami and implemented a MATLAB toolbox for spike sorting based on bayesian non-parametric methods and hierarchical clustering.
- ◇ **Pose Estimation** (2013) I worked with Prof. Shohreh Kasaei and did my B.Sc. thesis on the human body pose estimation problem, using 3D point cloud.

TEACHING EXPERIENCE ◇ **Teaching Assistant**

Statistical Learning, Sharif University of Technology, (Spring 2019), Prof. Rabiee
Machine Learning, Sharif University of Technology, (Fall 2018), Prof. Rabiee
Machine Learning, Sharif University of Technology, (Fall 2018), Prof. Soleymani
Probabilistic Graphical Model, Sharif University of Technology, (Spring 2018), Prof. Soleymani
Deep Learning, Sharif University of Technology, (Fall 2017), Prof. Soleymani
Probabilistic Graphical Model, Sharif University of Technology, (Spring 2017), Prof. Soleymani
Artificial Intelligence, Sharif University of Technology, (Spring 2017), Prof. Soleymani
Probabilistic Graphical Model, Sharif University of Technology, (Spring 2016), Prof. Soleymani
Statistical Learning, Sharif University of Technology, (Spring 2016), Prof. Rabiee
Machine Learning, Sharif University of Technology, (Fall 2015), Prof. Soleymani
Stochastic Processes, Sharif University of Technology, (Fall 2015), Prof. Rabiee
Machine Learning, Sharif University of Technology, (Spring 2015), Prof. Rabiee
Engineering Probability and Statistics, Sharif University of Technology, (Fall 2014), Prof. Rabiee
Introduction to 3D Computer Vision, Sharif University of Technology, (Fall 2012), Prof. Kasaei
Numerical Methods, Sharif University of Technology, (Fall 2011), Dr. Gharib

◇ **Teaching**

Introduction to Deep Learning, Short course at Rahnema College, (2019)
Introduction to Machine Learning, Presentation at Shahid Beheshti University, (2018)
Practical Machine Learning, Workshop at Sharif University of Technology, (2017)
Mathematics and Geometry, Allameh Helli 1 high school, Tehran, Iran, (2010-2014)

SKILLS

- ◇ Natural Languages: Persian (Native), English (Fluent)
- ◇ Programming: Java, Python, C++, C#, MATLAB
- ◇ Machine Learning: Scipy Stack, Pandas, Scikit Learn, Keras, Tensorflow, Caffe, MXNet
- ◇ Computer Vision: OpenCV, Point Cloud Library
- ◇ Image Processing: GIMP, ImageMagick, Inkspace
- ◇ Web: Django, Django Rest Framework