

MOHAMMAD RASTEGARI

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CURRENT POSITIONS:

- **Senior AI/ML Technical Leader** , Apple Inc. Seattle, WA
- **Affiliate Assistant Professor** , University of Washington, Department of Computer Science and Engineering Seattle, WA

PAST POSITIONS:

- **Chief Technology Officer (CTO)** , XNOR.AI. Seattle, WA
- **Research Scientist** , Allen Institute for Artificial Intelligence (AI2). Seattle, WA

EDUCATION:

- **PhD** Computer Science Department, University of Maryland College Park, MD, USA, Sep 2012 - Aug 2015. Research Area: *Computer Vision*. **Advisor:** *Prof. Larry Davis*,
- **Visiting Scholar** Computer Science Department, University of California at Berkeley. Berkeley, CA, Will Join in April 2015.
- **Visiting Scholar** Computer Science Department, University of Illinois at Urbana Champaign (UIUC). Urbana, IL, USA, Apr 2011 - Aug 2011.
Research Subject: *Large Scale Object Category Recognition*. **Advisor:** *Prof. David Forsyth*
Co-Advisor: *Dr. Ali Farhadi*
- **PhD** Computer Science Department, Dartmouth College Hanover, NH, USA, Sep 2010 - Aug 2012.
Transferred to University of Maryland
Research Area: *Computer Vision*. **Advisor:** *Prof. Lorenzo Torresani, Prof. David Forsyth*
- **Graduate Research** Computer Vision and Active Perception Laboratory (CVAP), Royal institute of technology (KTH) Stockholm, Sweden, March 2009 - September 2009.
Research Subject: *Capturing and Visualizing Large Scale Human Action*. **Advisor:** *Prof. Stefan Carlsson*. **Co-Advisor:** *Dr. Josephine Sullivan*
- **Graduate Research** Computer Vision Group, Institute for Research in Fundamental Science (IPM) Tehran, Iran, 2007-2010.
Research Subject: *Cartoon Motion Capturing and Shape Analysis* **Advisor:** *Prof. Mehrdad M.Shahshahani*. **Co-Advisor:** *Dr. Niloofar Gheissari*
- **Master of Engineering** University of Science and Research Computer Engineering Department Tehran, Iran, 2007-2009. (GPA 18.69/20)
Thesis Subject: *Cartoon Motion Capturing and Retargeting* **Advisor:** *Prof. Mehrdad M.Shahshahani*. **Co-Advisor:** *Dr. M.Mohsen Pedram*
- **Bachelor of Engineering** Shomal University of Amol (SUA) Computer Engineering Department Tehran, Iran, 2003-2007.
Thesis Subject: *Quantum Approach to Image Processing*

PUBLICATIONS:

- *Discovering Neural Wirings*, (M Wortsman, A Farhadi, **M Rastegari**), NeuroIPS 2019.
- *DiCENet: Dimension-wise Convolutions for Efficient Networks*, (Sachin Mehta, Hannaneh Hajishirzi, **Mohammad Rastegari**), Under Submission 2019.
- *Butterfly Transform: An Efficient FFT Based Neural Architecture Design*, (Keivan Alizadeh, Ali Farhadi, **Mohammad Rastegari**), Under Submission 2019.
- *ELASTIC: Improving CNNs With Dynamic Scaling Policies*, (H Wang, A Kembhavi, A Farhadi, AL Yuille, **M Rastegari**), CVPR 2019.
- *OK-VQA: A Visual Question Answering Benchmark Requiring External Knowledge*, (K Marino, **M Rastegari**, A Farhadi, R Mottaghi), CVPR 2019.
- *Assisted Excitation of Activations: A Learning Technique to Improve Object Detectors*, (MM Derakhshani, S Masoudnia, AH Shaker, O Mersa, MA Sadeghi, **M Rastegari**), CVPR 2019.

- *Two Body Problem: Collaborative Visual Task Completion*, (Unnat Jain, Luca Weihs, Eric Kolve, Mohammad Rastegari, Svetlana Lazebnik, Ali Farhadi, Alexander G Schwing, Aniruddha Kembhavi), CVPR 2019.
- *Learning to Learn How to Learn: Self-Adaptive Visual Navigation Using Meta-Learning*, (Mitchell Wortsman, Kiana Ehsani, Mohammad Rastegari, Ali Farhadi, Roozbeh Mottaghi), CVPR 2019.
- *Espnetv2: A light-weight, power efficient, and general purpose convolutional neural network*, (Sachin Mehta, Mohammad Rastegari, Linda Shapiro, Hannaneh Hajishirzi), CVPR 2019.
- *Pyramidal recurrent unit for language modeling*, (Sachin Mehta, Rik Koncel-Kedziorski, Mohammad Rastegari, Hannaneh Hajishirzi), EMNLP 2018.
- *Label refinery: Improving imagenet classification through label progression*, (Hessam Bagherinezhad, Maxwell Horton, Mohammad Rastegari, Ali Farhadi), arXiv 2018.
- *Espnet: Efficient spatial pyramid of dilated convolutions for semantic segmentation*, (Sachin Mehta, Mohammad Rastegari, Anat Caspi, Linda Shapiro, Hannaneh Hajishirzi), ECCV 2018.
- *Iqa: Visual question answering in interactive environments*, (Daniel Gordon, Aniruddha Kembhavi, Mohammad Rastegari, Joseph Redmon, Dieter Fox, Ali Farhadi), CVPR 2018.
- *LCNN: Look-up based convolutional neural networks*, (H Bagherinezhad, M Rastegari, A Farhadi), CVPR 2017.
- *XNOR-Net: ImageNet Classification Using Binary Convolutional Neural Networks*, (M Rastegari, V Ordonez, J Redmon, A Farhadi), ECCV 2016.
- *"What happens if..." Learning to Predict the Effect of Forces in Images*, (R Mottaghi, M Rastegari, A Gupta, A Farhadi), ECCV 2016.
- *G-CNN: an Iterative Grid Based Object Detector*, (M Najibi, M Rastegari, LS Davis), CVPR 2016.
- *Newtonian Scene Understanding: Unfolding the Dynamics of Objects in Static Images*, (R Mottaghi, H Bagherinezhad, M Rastegari, A Farhadi), CVPR 2016.
- *Computationally Bounded Retrieval*, (M. Rastegari, C. Keskin, P. Kohli, S. Izadi), CVPR 2015.
- *Discriminative and Consistent Similarities in Instance-Level Multiple Instance Learning*, (M. Rastegari, H. Hajishirzi, A. Farhadi), CVPR 2015.
- *Class Consistent Multi-Modal Fusion with Binary Features*, (A. Shrivastava, M. Rastegari, S. Shekhar, R. Chellappa, L. Davis), CVPR 2015.
- *Domain Adaptive Classification*, (M. Rastegari*, F. Mirrashed*), ICCV 2013. (*equal contribution)
- *Predictable Dual-View Hashing*, (M. Rastegari, J. Choi, S. Fakhraei, H. Daume, L. Davis), ICML 2013.
- *Multi-Attribute Queries: To Merge or not to Merge?*, (M. Rastegari, D. Parikh, A. Farhadi), CVPR 2013.
- *Adopting Unseen Examples to a Category by Learned Attributes*, (J. Choi, M. Rastegari, A. Farhadi, L. Davis), CVPR 2013.
- *Semantic Understanding of Professional Soccer Commentaries*, (H. Hajishirzi, M. Rastegari, A. Farhadi and J. Hodgins), UAI 2012.
- *Attribute Discovery via Predictable Discriminative Binary Code*, (M. Rastegari, A. Farhadi and D. Forsyth), ECCV 2012.
- *Scalable Object-Class Retrieval with Approximate and Top-k Ranking*, (M. Rastegari*, C. Fang* and L. Torresani), *International Conference on Computer Vision (ICCV)* 2011, Barcelona, Spain. (*equal contribution)
- *Object Detection using Pictorial Structure from Active Basis*, (B. Saleh and M. Rastegari), *International Conference on Computer Vision Theory and Applications (VISAPP)* 2010, Angers, France. (Oral)
- *On Large-Scale Retrieval: Binary or n-ary Coding?*, (M. Rastegari, M. Najibi, M. Norouzi, L. Davis), Tech Report.

- **Sharing Subcategory Commonalities for Learning Generalizable Classifiers**, (J. Choi, M. Rastegari, A. Farhadi), Tech Report .
- **Comparing apples to apples in the evaluation of binary coding methods**, (M. Rastegari, S. Fakhraei, J. Choi, D. Jacobs, L. Davis), Tech Report .
- **Modeling Natural Images with Shared-Basis Mixtures**, (M. Rastegari, E. Shechtman, and A. Hertzmann), Technical Report. Adobe Research 2014
- **Acknowledging Commonalities: improving generalization of HOG-based SVMs**, (A. Farhadi, M. Rastegari, and A. Efros, M. Hebert), Technical Report CMU 2014.
- **Extremely Fast Nonlinear Classification via Discriminative Binning Maps**, (M. Rastegari, M. A. Sadeghi, A. Farhadi and D. Forsyth), Technical Report UIUC 2012.
- **Action Recognition in Large Scale Domain**, (M. Rastegari, J. Sullivan and S. Carlsson), Technical Report , KTH 2009.
- **Cartoon Motion Capturing and Retargeting by Rigid Shape Manipulation**, (M. Rastegari, M. Rouhani, N. Gheissari, and M.M. Pedram.) *IEEE proceeding, Digital Image Computing Technique and Application (DICTA)* 2009, Melbourne, Australia. **(Oral)**
- **System of linear differential equations and collocation method**, (M.Saravi, E. Babolian and M. Rastegari) *Mathematic Scientific Journal (MSJ)*, Volume 5, NO.2 , Autumn-Winter 2009-2010, Page: 79-87.
- **Multi-scale Cartoon Motion Capture and Retargeting without Shape Matching**, (M. Rastegari and N. Gheissari.) *IEEE proceeding, Digital Image Computing Technique and Application (DICTA)* 2008, Canaberra, Australia.
- **Solution of linear ODEs by a pseudo-spectral method with coefficient singularity**, (M. Rastegari, M. Saravi, R. England, M.T Bromilow.) *22nd Biennial Conference on Numerical Analysis University of Dundee* 2007, Dundee, Scotland.
- **An experimental method for modifying pseudo-spectral method for solving ODEs with singularity point**, (M. Saravi, E. Babolian and M. Rastegari.) *36th Annual International Mathematics Conference of Iran sept*, 2005, Yazd, Iran.
- **Quantum approach to Image Processing** , (M. Rastegari) *Technical Report*. Shomal University. 2007.

RESEARCH INDUSTRY EXPERIENCE:

- **Research Intern** at Facebook AI Research, Menlo Park, USA, Jan 2015 - Apr 2015.
- **Research Intern** at Microsoft Research, Redmond, USA, Nov 2014 - Jan 2015.
Research Subject: *Real-Time Accurate Pose-Estimation via Large-Scale Retrieval* **Advisor: Dr. Shahram Izadi, Dr. Pushmeet Kohli Dr. Cem Keskin**
- **Research Intern** at Microsoft Research, Cambridge, UK, Jun 2014 - Sep 2014.
Research Subject: *Fast Image Hashing*. **Advisor: Dr. Pushmeet Kohli and Dr. Cem Keskin**
- **Research Intern** at Adobe Research, Seattle, WA, USA, Jun 2013 - Aug 2013.
Research Subject: *Fast Image Prior*. **Advisor: Prof. Aaron Hertzmann and Dr. Eli Shechtman**
- **Research Intern** at Disney Research Lab, Pittsburgh, PA, USA, Jan 2012 - Aug 2012.
Research Subject: *Semantic Understanding of Professional Soccer Commentaries*. **Advisor: Prof. Jessica Hodgins Co-Advisor: Dr. Hannaneh Hajishirzi**

AWARDS AND HONORS:

- **Winner of Facebook PhD Fellowship 2014-2015 for \$30,000 (Worldwide selection of 12 graduate students)** at Facebook Academia.
- **Microsoft Research PhD Fellowship Finalist 2014.**
- **Facebook Fellowship Finalist 2013-2014** at Facebook Academia.
- **Adobe Research Award \$10000** for one semester research on PhD at University of Maryland.
- **Dean Award \$5000** at University of Maryland.
- **5th rank** among over 9000 participants, National Graduate Entrance Exam in Computer Engineering, Iran 2007.

- **Ranked first** in the graduating class in Master of Computer Engineering, University of Science and Research, 2009.
- **Ranked second** in the class of 2007 in Computer Engineering, Shomal University, 2007.

SERVED AS PROGRAM COMMITTEE:

- IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**).
- IEEE International Conference on Computer Vision (**ICCV**).
- European Conference on Computer Vision (**ECCV**).
- IEEE International Conference on Machine Learning (**ICML**).
- Neural Information Processing Systems (**NIPS**).
- International Conference on Learning Representations (**ICLR**).
- International Journal of Computer Vision (**IJCV**).
- IEEE Transaction on Pattern Analysis and Machine Intelligence (**PAMI**).
- Neurocomputing Journal.