Lucio Dery

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EDUCATION

Carnegie Mellon University — **Pittsburgh, PA**
PhD in Computer Science — *Expected Graduation: June 2023*

Stanford University — **Stanford, CA**
*MS in Computer Science ** Tau Beta Pi* — *Sept 2016 - June 2018*

Stanford University — **Stanford, CA**
*BS in Physics + Minor in Computer Science ** With Distinction* — *Sept 2013 - June 2018*

RESEARCH INTERESTS

- Natural Language Processing, Meta-Learning, Multitasking, Weak Supervision

PUBLICATIONS / TALKS

Journal Papers

- **Dery, Lucio Mwinmaarong**, et al. "Weakly supervised classification in high energy physics." Journal of High Energy Physics 2017.5 (2017): 1-11 [Paper] [Code]

Conference Papers

- **Lucio M. Dery**, Yann Dauphin, David Grangier. "Auxiliary task update decomposition: the good, the bad and the neutral". ICLR, 2021 [Paper][Code]
- D.A-Huang, Shyamal Buch, **Lucio Dery**, Animesh Garg, Li Fei-Fei, Juan Carlos Niebles. "Finding 'It': Weakly-Supervised Reference-Aware Visual Grounding in Instructional Video." CVPR, 2018 **(Oral)**[Paper][Code]
- Eli Shlizerman, **Lucio Dery**, Hayden Schoen, Ira Kemelmacher. "Audio to Body Dynamics." CVPR, 2018 [Paper][Code][Press]

Pre-prints

- **Lucio M. Dery**, Paul Michel, Ameet Talwalkar, Graham Neubig. "Should We Be Pre-training? An Argument for End-task Aware Training as an Alternative" (under submission) [Paper]

Invited Talks

- 2018 Black In A.I Workshop. Neural Information Processing Systems (NeurIPS), Invited Talk
- 2017 International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT), Poster Presentation
- 2017 Black In A.I Workshop. Neural Information Processing Systems (NIPS), Poster Presentation

INDUSTRY EXPERIENCE

Google Brain - Google — **Remote**
Research Intern — *June 2020 - August 2020*

- Leveraged out-of-distribution data via Gradient Alignment
- Examined auxiliary task gradients within subspace spanned by primary task gradients

Facebook A.I Research - Facebook — **Seattle, WA**
Research Engineer — *July 2018 – July 2019*

- Studied learning Neural Knowledge Graphs by Generating Wikipedia
- Probed Commonsense and World Knowledge Capabilities of State-of-the-Art Co-reference Models
- Open-sourced Audio to Body Dynamics
- Contributed to FAIRSEQ

Applied Machine Learning - Facebook **Seattle, WA**
Software Engineering Intern *June 2017 – August 2017*
- Worked on Audio-Visio Multimodal Learning for understanding human mannerisms
- Developed recurrent architecture for learning transformations from audio features to body key-points

Terra Bella - Google **Mountain View, CA**
Software Engineering Intern *June 2016 – August 2016*
- Applied unsupervised learning techniques to Satellite images to cluster similar socio-economic regions and detect changing regions over time
- Extensive feature engineering through experimentation with remote sensing signal spaces like NDVI (Normalized Difference of Vegetation Index), MSAVI and NDBI
- Built Tensor Flow model that utilized Inception V3 featurization of remote sensing signal spaces to automatically identify similar regions like Golf Courses or Airports within and across cities

Google Analytics - Google **Mountain View, CA**
Engineering Practicum Intern *June 2015 – August 2015*
- Conducted background experimentation and comparative performance visualizations in R on time series prediction algorithms in Analytics libraries against third party algorithms
- Implemented Autoregressive Integrated Moving Averages (ARIMA) time series forecasting. Resulting implementation was on average faster than R implementation and of comparable accuracy
- Exposed ensemble mode API that allows developers to use suite of forecasting algorithms

OTHER RESEARCH EXPERIENCE

Unsupervised Understanding of Instructional Videos **Stanford, CA**
Stanford Vision and Learning Lab *March 2017 – March 2018*
- Developed algorithm for unsupervised extraction of task graphs from instructional videos
- Developed a joint formulation and solution of Reference Resolution and Visual Grounding in instructional videos using extracted task graphs

Unsupervised Action Segmentation and Localization in Video Demonstrations **Stanford, CA**
Stanford Vision and Learning Lab *January 2017 – March 2017*
- Combined Convolutional Auto encoder with clustering algorithm to produce video segmentation proposals
- Discovered Longest Common Subsequence (LCSS) across multiple video segmentations by augmenting multidimensional LCSS algorithm with Dynamic Time Warping
- Created an End-To-End trainable unsupervised pipeline that utilized learned LCSS across videos to update representations learned by Convolutional Auto Encoder

Weakly Supervised Classification In High Energy Physics **Stanford, CA**
SLAC National Accelerator Laboratory *September 2016 – February 2017*
- Developed a weakly supervised deep learning algorithm whose only input is class proportions in different distribution regimes instead of individual labels.
- Matched the performance of Fully Supervised network on Quark-Gluon Tagging discrimination task
- Created an End-To-End trainable unsupervised pipeline that utilized learned LCSS across videos to update representations learned by Convolutional Auto Encoder

CNNs for Discriminating Higgs Boson Production Mechanisms **Stanford, CA**
SLAC National Accelerator Laboratory *March 2016 – September 2016*

- Converted Vector Boson Fusion (VBF) and Gloun-Gloun Fusion (GGF) event data into image representations that could be analyzed and fed into any computer vision-based algorithm for classification
- Designed residual convolutional network architecture to discriminate between GGF and VBF events
- Established the presence of new physics outside of current widely used HTSoft marker that can be used to discriminate the two event types

TEACHING EXPERIENCE

- Section Leader, Stanford Code In Place, Spring 2020
- Computer Vision Instructor, African Masters in Machine Intelligence, Summer 2019
- Head Teaching Assistant, Deep Learning (CS230) Stanford University, Spring 2018
- Course Assistant, Deep Learning (CS230), Stanford University, Winter 2018
- Course Assistant, Machine Learning (CS229), Stanford University, Autumn 2017
- Section Leader, Programming Methodology (CS106A), Stanford University, 2014 - 2017
- Section Leader, Programming Abstractions (CS106B), Stanford University, 2014 - 2017
- Summer School Instructor, Enza Academy, Summer 2015

HONORS / AWARDS

- Stanford Chapter Tau Beta Pi Honor Society
- Stanford Black Community Center Award for Academic Excellence
- Stanford Center for African Studies Leadership and Service Award
- Stanford Computer Science Department TA Award ($1000 awarded to top 5% of Course Assistants in Spring 2018)
- 3rd Best Student, West African Senior Secondary Certificate Examination (out of over 2.5 million students from Anglophone West Africa in 2013)
- 2nd Place, Ghana National Math and Science Olympiad (out of 32 Selected Schools)