

# Lucio Dery

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## EDUCATION

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**Carnegie Mellon University**

*PhD in Computer Science*

**Pittsburgh, PA**

*Expected Graduation: June 2023*

**Stanford University**

*MS in Computer Science \*\* Tau Beta Pi*

**Stanford, CA**

*Sept 2016 - June 2018*

**Stanford University**

*BS in Physics + Minor in Computer Science \*\* With Distinction*

**Stanford, CA**

*Sept 2013 - June 2018*

## RESEARCH INTERESTS

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

## PUBLICATIONS / TALKS

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### 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

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**Google Brain - Google**

*Research Intern*

**Remote**

*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**

*Research Engineer*

**Seattle, WA**

*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**

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### **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

### **CNNs for Discriminating Higgs Boson Production Mechanisms**

**Stanford, CA**

*SLAC National Accelerator Laboratory*

*March 2016 – September 2016*

- Converted Vector Boson Fusion (VBF) and Gluon-Gluon 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

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- 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

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- 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)

## SERVICE

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- Reviewer - ICLR 2022
- Graduate School Application Mentorship - [Black In AI](#)
- Mock Interviewer - Underrepresented minorities seeking Software Engineering Roles