Colorado Reed

Electrical Engineering and Computer Science
University of California, Berkeley
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PROFESSIONAL EXPERIENCE

2022– **Visiting Researcher**
Meta AI Research
Leading *Fate of Snow* project to determine snowpack in key mountainous basins using massive, multimodal earth observations.
Meta Collaborators: Salvatore Candido, Matt Uyttendaele, Joe Spisak, Ammar Rizvi

2020–2023 **Graduate Researcher (PhD)**
2013–2015 Computer Science
University of California, Berkeley
Research: Unsupervised and multimodal computer vision to address key scientific problems related to climate change.
Advisors: Kurt Keutzer and Trevor Darrell

2021–2021 **Research Intern**
Meta Reality Labs
Research: Multiscale represetnation learning.
Advisors: Bichen Wu and Peter Vajda

2014–2020 **Co-founder & CTO**
Fraction Inc.
San Francisco, CA
Managed team of 5+ engineers; set technical direction; fundraising

2012–2013 **Graduate Researcher (MPhil)**
Department of Engineering
University of Cambridge
Research: efficient Bayesian non-parametric inference via submodular optimization
Advisor: Zoubin Ghahramani

2011 **Research Intern**
Machine Learning and Instrument Autonomy Group
NASA JPL, Pasadena, CA
Research: online anomaly detection for astronomical data

2010 **Research Intern**
LIGO Group
California Institute of Technology
Research: ML methods for detection of gravitational waves

2008–2012 **Undergraduate Researcher**
Department of Physics
University of Iowa
Research: ML methods for detection of novel particles at LHC/Fermilab

EDUCATION

2020–2023 **PhD in Computer Science**, University of California, Berkeley, USA
2013–2015

2012–2013 **MPhil in Computer Science**, University of Cambrdige, UK

2008–2012 **BSc in Applied Physics and Computer Science**, University of Iowa, USA

SELECT GRANTS, AWARDS, & HONORS

2022–2023 Led National Geospatial-Intelligence Agency STTR Funding for "Multi-Scale Representation Learning" Project ($150k)

2022–2023 Berkeley AI Research Commons Grant for "Fate of Snow" - ($120k)

2020–2021 Berkeley Deep Drive Grant for "High-Level Context for Object Recognition" - ($70k)

2015–2020 Raised $3M in venture funding for Fraction Inc.

2013–2016 NDSEG Fellowship

2012–2013 Winston Churchill Scholarship (14 national recipients; Cambridge tuition & stipend)

2012 NSF GRFP Fellowship (declined to accept NDSEG)

2012 University of Iowa Valedictorian

2010–2012 Barry M. Goldwater Scholarship

PUBLICATIONS

UNDER REVIEW

3. Brown, P. T., H. Hanley, A. Mahesh, **Colorado Reed**, S. J. Strenfel, A. K. Kochanski, C. C. Clements
Anthropogenic Influence on California's Extreme Wildfire Risk. (2022).

2. Akash Gokul, Konstantinos Kallidromitis, Shufan Li, Yusuke Kato, Kazuki Kozuka, Trevor Darrell, **Colorado Reed**
Refine and Represent: Region-to-Object Representation Learning. (2022).

1. Kevin Miao, Suzanne Petryk, Akash Gokul, Raghav Singh, Kurt Keutzer, Joseph Gonzalez, Trevor Darrell, **Colorado Reed**
Prior Knowledge-Guided Attention in Self-Supervised Vision Transformers. (2022).

PEER REVIEWED CONFERENCES

11. Amir Bar, Xin Wang, Vadim Kantorov, **Colorado Reed**, Roei Herzig, Gal Chechik, Anna Rohrbach, Trevor Darrell, Amir Globerson
DETReg: Unsupervised Pretraining with Region Priors for Object Detection.
CVPR 2022.

10. **Colorado Reed***, Xiangyu Yue*, Ani Nrusimha, Sayna Ebrahimi, Vivek Vijaykumar, Richard Mao, Bo Li, Shanghang Zhang, Devin Guillory, Sean Metzger, Kurt Keutzer, Zhao
Self-Supervised Pretraining Improves Self-Supervised Pretraining
WACV 2022.

9. Bo Li, Yifei Shen, Yezhen Wang, Wenzhen Zhu, **Colorado Reed**, Jun Zhang, Dongsheng Li, Kurt Keutzer, Han Zhao
Invariant Information Bottleneck for Domain Generalization
AAAI 2022.

8. **Colorado Reed***, Tete Xiao*, Xiaolong Wang, Kurt Keutzer, Trevor Darrell
Region Similarity Representation Learning.
ICCV 2021.

7. **Colorado Reed**, Sean Metzger, Aravind Srinivas, Trevor Darrell, Kurt Keutzer.
SelfAugment: Automatic Augmentation Policies for Self-Supervised Learning.
CVPR 2021.

6. Amy Pavel, **Colorado Reed**, Bjoern Hartmann, Maneesh Agrawala
Video Digests: A Browsable, Skimmable Format for Informational Lecture Videos.
ACM 27th Symposium on User Interface Software and Technology, 2014.

5. **Colorado Reed**, Zoubin Ghahramani
Scaling the Indian Buffet Process via Submodular Maximization.
ICML 2013.

4. David R. Thompson, Walid A. Majid, **Colorado Reed**, Kiri L. Wagstaff
Semi-supervised eigenbasis novelty detection.
The ASA Data Science Journal, 6(3), 195-204. 2012.

3. **Colorado Reed**, David R. Thompson, Walid A. Majid, Kiri L. Wagstaff
Real time machine learning to find fast transient radio anomalies: A semi-supervised approach combining detection and RFI excision.
Proc. Int'l Astronomical Union Symp. Time Domain Astronomy. 2011.

2. David R. Thompson, Walid A. Majid, **Colorado Reed**, Kiri L. Wagstaff
Semi-supervised novelty detection with adaptive eigenbases, and application to radio transients. Conference on Intelligent Data Understanding, 2011. *Best Paper Award*

1. **Colorado Reed**, Todd Elvers, Padmini Srinivasan
What's trending? Mining topical trends in UGC systems with YouTube as a case study.
17th ACM SIGKDD, 2011.

PEER REVIEWED WORKSHOPS

4. Malachy Moran, Kayla Woputz, Derrick Hee, Manuela Girotto, Paolo D'Odorico, Ritwik Gupta, Daniel Feldman, Puya Vahabi, Alberto Todeschini, **Colorado Reed**
Snowpack Estimation in Key Mountainous Water Basins from Openly-Available, Multimodal Data Sources
CVPR 2022 MultiEarth Workshop - Oral Presentation.

3. Dhileeban Kumaresan, Richard Wang, Ernesto A Martinez, Richard Cziva, Alberto Todeschini, **Colorado Reed**, Puya Vahabi
SunCast: Solar Irradiance Nowcasting from Geosynchronous Satellite Data.
NeurIPS 2021 Workshop on Tackling Climate Change with Machine Learning.

2. Poonam Parhar, Ryan Sawasaki, Alberto Todeschini, **Colorado Reed**, Hossein Vahabi, Nathan Nusaputra, Felipe Vergara HyperionSolarNet: Solar Panel Detection from Aerial Images
NeurIPS 2021 Workshop on Tackling Climate Change with Machine Learning.

1. Chitra Agastya, Sirak Ghebremusse, Ian Anderson, **Colorado Reed**, Hossein Vahabi, Alberto Todeschini
Self-supervised Contrastive Learning for Irrigation Detection in Satellite Imagery
ICML Workshop Tackling Climate Change with Machine Learning, 2021.

TECHNICAL REPORTS

3. Xiangyu Yue, Zangwei Zheng, **Colorado Reed**, Hari Prasanna Das, Kurt Keutzer, Alberto Sangiovanni Vincentelli Multi-source Few-shot Domain Adaptation arXiv:2002.12169. 2021.

2. Sicheng Zhao, Bo Li, **Colorado Reed**, Pengfei Xu, Kurt Keutzer
Multi-Source Domain Adaptation In The Deep Learning Era: A Systematic Survey. arXiv:2002.12169. 2020.

1. **Colorado Reed**
Submodular MAP Inference for Scalable Latent Feature Models.
Cambridge Master's Thesis. 2013.

OPEN-SOURCE PROJECTS

I actively contribute to open source projects and libraries, see my Github for more details.

2013– **Metacademy** – www.metacademy.org
A collaboratively constructed web-of-knowledge for machine learning concepts
2M+ visits
Co-creator and core developer.

2014– **Video Digests** – https://videodigests.com
A browsable, skimmable format for informational lecture videos.
Co-creator and core developer.

ADVISING

ADVISING AND MENTORING

2022– Shufan Li (UCB undergrad; research in prep)
Araav Patel (UCB undergrad; research in prep)
Raymond Mo (UCB undergrad; research in prep)
Jacob Yeung (UCB undergrad; research in prep)
Shashwath Senthil (high school; research in prep)

2021–2022 Kevin Miao (UCB Masters; research in prep)
Aakash Gokul (UCB Masters; research in prep)
Shufan Li (UCB undergrad; research in prep)
Araav Patel (UCB undergrad; research in prep)

2020–2021 Vivek Vijaykumar (high school; 1 WACV 2022 paper; next: undergrad at GA Tech)
Richard Mao (UCB undergrad; 1 WACV 2022 paper; next: engineer at Meta)

REVIEWER

WACV (2022) – ECCV (2022) – NeurIPS (2020, 2021) – CVPR (2021) – ICML (2014) – UIST (2014)

SKILLS

Languages:
- Python, JavaScript, Go, Bash (years of production-level development)
- C++, C, Ruby, Erlang (working knowledge)

Tools/Libraries:
- Pytorch, Tensorflow, OpenCV, Numpy, Ray, Matplotlib
- Docker, Singularity, Ansible, Chef
- LaTeX, Illustrator, Final Cut Pro, emacs, tmux

MISC

- Avid ultra-runner, completing events such as the World's End 100k and Leadville 50 miler, as well as a many marathons and 50ks.
- I am a lifelong baker – occasionally hosting events and fundraisers.