
Bryan A. Plummer

Computer Vision • Machine Learning • Natural Language Processing

EDUCATION

- 2013 – 2018 **University of Illinois at Urbana-Champaign, Urbana, IL**
PHD IN COMPUTER SCIENCE
Thesis: Grounding Natural Language Phrases in Images and Video
Advisor: Svetlana Lazebnik
- 2011 – 2013 **University of Illinois at Urbana-Champaign, Urbana, IL**
BS IN COMPUTER SCIENCE
- 2009 – 2011 **Mesa Community College, Mesa, AZ**
ASSOCIATE IN SCIENCE, ASSOCIATE IN ARTS

ACADEMIC EXPERIENCE

- Assistant Professor**, Boston University July 2020 – Present
Research Assistant Professor, Boston University September 2019 – June 2020
Postdoctoral Associate, Boston University April 2018 – August 2019
Supervisors: Kate Saenko and Stan Sclaroff
- Graduate Research Assistant**, UIUC August 2013 – April 2018
Supervisor: Svetlana Lazebnik
- Undergraduate Research Assistant**, UIUC September 2011 – December 2012
Supervisor: Derek Hoiem

CONFERENCE PUBLICATIONS

- [1] D. Kim, K. Saito, T.-H. Oh, B. A. Plummer, S. Sclaroff, and K. Saenko. CDSP: Cross-Domain Self-supervised Pre-training. In *The IEEE International Conference on Computer Vision (ICCV)*, 2021.
- [2] S. Mishra, Z. Zhang, Y. Shen, R. Kumar, V. Saligrama, and B. A. Plummer. Effectively leveraging attributes for visual similarity. In *The IEEE International Conference on Computer Vision (ICCV)*, 2021.
- [3] R. Tan, H. Xu, K. Saenko, and B. A. Plummer. Logan: latent graph co-attention network for weakly-supervised video moment retrieval. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2021.
- [4] R. Tan, B. A. Plummer, and K. Saenko. Detecting cross-modal inconsistency to defend against neural fake news. In *Empirical Methods in Natural Language Processing (EMNLP)*, 2020.
- [5] A. Burns, D. Kim, D. Wijaya, K. Saenko, and B. A. Plummer. Learning to scale multilingual representations for vision-language tasks. In *The European Conference on Computer Vision (ECCV)*, 2020.
- [6] B. A. Plummer, M. I. Vasileva, V. Petsiuk, K. Saenko, and D. Forsyth. Why do these match? Explaining the behavior of image similarity models. In *The European Conference on Computer Vision (ECCV)*, 2020.
- [7] D. Kim, K. Saito, K. Saenko, S. Sclaroff, and B. A. Plummer. MULE: Multimodal universal language embedding. In *AAAI Conference on Artificial Intelligence*, 2020.
- [8] A. Burns, R. Tan, K. Saenko, S. Sclaroff, and B. A. Plummer. Language features matter: Effective language representations for vision-language tasks. In *The IEEE International Conference on Computer Vision (ICCV)*, 2019.
- [9] R. Tan, M. I. Vasileva, K. Saenko, and B. A. Plummer. Learning similarity conditions without explicit supervision. In *The IEEE International Conference on Computer Vision (ICCV)*, 2019.
- [10] H. Xu, K. He, B. A. Plummer, L. Sigal, S. Sclaroff, and K. Saenko. Multilevel language and vision integration for text-to-clip retrieval. In *AAAI Conference on Artificial Intelligence*, 2019.
- [11] B. A. Plummer, M. H. Kiapour, S. Zheng, and R. Piramuthu. Give me a hint! Navigating Image Databases using Human-in-the-loop Feedback. In *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2019.
- [12] M. I. Vasileva, B. A. Plummer, K. Dusad, S. Rajpal, R. Kumar, and D. Forsyth. Learning type-aware embeddings for fashion compatibility. In *The European Conference on Computer Vision (ECCV)*, 2018.
- [13] B. A. Plummer, P. Kordas, M. H. Kiapour, S. Zheng, R. Piramuthu, and S. Lazebnik. Conditional image-text embedding networks. In *The European Conference on Computer Vision (ECCV)*, 2018.
- [14] B. A. Plummer, A. Mallya, C. M. Cervantes, J. Hockenmaier, and S. Lazebnik. Phrase localization and visual relationship detection with comprehensive image-language cues. In *The IEEE International Conference on Computer Vision (ICCV)*, 2017.
- [15] B. A. Plummer, M. Brown, and S. Lazebnik. Enhancing video summarization via vision-language embedding. In *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017.

-
- [16] T. Tommasi, A. Mallya, B. A. Plummer, S. Lazebnik, A. C. Berg, and T. L. Berg. Solving visual madlibs with multiple cues. In *British Machine Vision Conference (BMVC)*, 2016.
 - [17] P. D. Tsatsoulis, B. A. Plummer, and D. Forsyth. Visual analogies: a framework for defining aspect categorization. In *The European Conference on Computer Vision Workshop (ECCVW) on Transferring and Adapting Source Knowledge in Computer Vision (TASK-CV)*, 2016.
 - [18] B. A. Plummer, L. Wang, C. M. Cervantes, J. C. Caicedo, J. Hockenmaier, and S. Lazebnik. Flickr30k entities: collecting region-to-phrase correspondences for richer image-to-sentence models. In *The IEEE International Conference on Computer Vision (ICCV)*, 2015.

JOURNAL PUBLICATIONS

- [19] B. A. Plummer, K. J. Shih, Y. Li, K. Xu, S. Lazebnik, S. Sclaroff, and K. Saenko. Revisiting image-language networks for open-ended phrase detection. *Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2020.
- [20] T. Tommasi, A. Mallya, B. A. Plummer, S. Lazebnik, A. C. Berg, and T. L. Berg. Combining multiple cues for visual madlibs question answering. *International Journal of Computer Vision (IJCV)*, 127(1):38–60, 2019.
- [21] B. A. Plummer, L. Wang, C. M. Cervantes, J. C. Caicedo, J. Hockenmaier, and S. Lazebnik. Flickr30k entities: collecting region-to-phrase correspondences for richer image-to-sentence models. *International Journal of Computer Vision (IJCV)*, 123(1):74–93, 2017.

PATENTS

- [1] B. M. Fields, S. Roberson, A. Harish, H. Lim, M. J. Waughtel, B. A. Plummer, and P. A. Brown. Driver organization and management for driver's education. *US Patent 10,373,523*, 2019.
- [2] B. A. Plummer, P. A. Brown, B. M. Fields, and S. Roberson. Gaze tracking for a vehicle operator. *US Patent 9,547,798*, 2017.
- [3] B. M. Fields, S. Roberson, A. Harish, H. Lim, M. J. Waughtel, B. A. Plummer, and P. A. Brown. Real-time driver observation and progress monitoring. *US Patent 9,586,591*, 2017.
- [4] B. A. Plummer, P. A. Brown, J. He, B. M. Fields, S. Roberson, S. Cielocha, and J. Peng. System and method for monitoring and reducing vehicle operator impairment. *US Patent 9,758,173*, 2017.
- [5] B. A. Plummer, P. A. Brown, J. He, B. M. Fields, S. Roberson, S. Cielocha, and J. Peng. Systems and methodologies for real-time driver gaze location determination and analysis utilizing computer vision technology. *US Patent 9,275,532*, 2016.
- [6] B. A. Plummer, D. Cross, and N. L. Tofte. Method of estimating damage to a roof. *US Patent 9,262,564*, 2016.
- [7] B. A. Plummer, D. Cross, and N. L. Tofte. Systems and methods for assessing a roof and generating models. *US Patent 9,098,655*, 2015.
- [8] B. A. Plummer, D. Cross, and N. L. Tofte. Systems and methods for assessing property damage. *US Patent 8,756,085*, 2014.
- [9] B. M. Fields, J. He, J. A. Nepomuceno, S. Roberson, B. A. Plummer, K. C. Houdek, and N. Jain. Real-time driver observation and scoring for driver's education. *US Patent 8,876,535*, 2014.
- [10] B. A. Plummer and D. Cross. Systems and methods for assessing a roof. *US Patent 8,874,454*, 2014.

TEACHING

BU SPRING 2021	CS 585: Image and Video Computing , <i>Co-Instructor</i> , Enrollment: 90 students
BU SPRING 2021	CS 591: Multimodal Machine Learning , <i>Instructor</i> , Enrollment: 25 students
BU FALL 2020;2021	CS 542: Machine Learning , <i>Instructor</i> , Enrollment: 90-120 students
UIUC SPRING 2017	CS 543: Computer Vision , <i>Teaching Assistant</i> (Instructor: Derek Hoiem)

MENTORING

PhD Students

Andrea Burns (coadvised), Reuben Tan (coadvised), Zhongping Zhang, Diala Lteif (coadvised), Piotr Teterwak (coadvised), Siqi Wang

Other Students

Murtadha Al-Barani (masters), Sanjna Agrawal (undergrad), John (Yuanming) Chai (undergrad), Julius Frost (undergrad, 2021), Farheen Rahman (undergrad, 2020), Tammy Qiu (undergrad, 2019), Paige Kordas (undergrad, 2018)

INDUSTRY/RESEARCH LAB EXPERIENCE

- Ebay Research Labs**, *Research Intern* May 2017 – August 2017
Explored methods of using computer vision for e-commerce tasks including human-in-the-loop approaches.
- Google**, *Software Engineering Intern, PhD* May 2016 – August 2016
Developed vision-language approaches for tasks using video data.
- A9**, *Software Developer Intern* May 2015 – August 2015
Investigated possible alternative approaches to existing algorithms developed by the Visual Search team based on recent advances in image description.
- State Farm Research and Development Center**, *IT/Systems Intern* August 2014 – May 2015
Advisor to three computer vision projects in development at the center.
- MIT Lincoln Laboratory**, *Summer Research Program Intern* June 2014 – August 2014
Developed an approach using active learning for object recognition on natural images with an emphasis on finding rare object categories.
- State Farm Research and Development Center**, *IT/Systems Intern* November 2012 – August 2013
Built a system to use 3D scans of objects to detect anomalies and created a program to do real time ($\geq 5\text{Hz}$) gaze tracking using low resolution images on computationally limited platforms.
- NASA Jet Propulsion Laboratory**, *JPLSIP Intern* June 2012 – August 2012
Created a class that performs image matching using phase correlation to register an image and then align them as well as create an interface for HDF-EOS 5 images.
- Aqueous Solutions, LLC**, *Student SDE Intern* August 2011 – January 2013
Rewrote the installer, added automatic updating, and contributed to many other features in applications developed by the company.
- NASA Goddard Space Flight Center**, *SIES Intern* June 2011 – August 2011
Conducted a parameter search to produce specific results in a model that simulates snowflake growth and added GPU processing capabilities.

HONORS

† National award ‡ Regional award

- 2019 Best Fashion Paper Runner-up for “Learning Similarity Conditions Without Explicit Supervision,” ICCV Workshop on Computer Vision for Fashion, Art and Design
- 2019 NeurIPS Top Reviewer
- 2018–2021 CVPR Outstanding Reviewer
- 2016 Best Paper Award for “Visual Analogies: A Framework for Defining Aspect Categorization,” ECCV TASK-CV Workshop
- 2015 †NSF Graduate Research Fellowship Honorable Mention
- 2014, 2015 3M Foundation Fellowship
- 2013 UIUC Research Park Most Outstanding Undergraduate Intern Finalist
- 2012 †Barry M. Goldwater Scholar
- 2012 The Illinois Club Make-A-Difference Award
- 2011 †Coca-Cola Academic Team, Gold Scholar
- 2011 ‡All-Arizona Academic Team, First Team
- 2011 †Distinguished Chapter Officer Team, Phi Theta Kappa Honor Society
- 2011 †National Community College Aerospace Scholar
- 2011 †Presidential Volunteer Service Award, Gold
- 2011 ‡Most Distinguished Officer, Arizona Hall of Honor, Phi Theta Kappa Honor Society
- 2011 MCC Excellence in Service Award
- 2011 PTK Five Star Competitive Edge Award
- 2011 MCC Honors Speaker, Academic Achievement Awards Keynote
- 2010, 2011 MCC Honors in Action Award
- 2010 †Leaders of Promise, Phi Theta Kappa Honor Society
- 2010 ‡UCAN Serve Impact Scholar
- 2010 MCC Service Scholar
- 2010 Academic Achievement Award, MCC Psychology Department
- 2009 MCC Foundation Scholarship

OUTREACH AND SERVICE

2021 Boston University Research in Science & Engineering Program (RISE) Mentor
2018 – 2020 Boston University AI4All Project Mentor
2016 CS Admissions Committee Graduate Application Reviewer
2014 – 2015 CS Grad Peer Mentor
2013 – 2018 CS Grad Ambassador
2013 – 2015 SigBot and SigArt Project Mentor, ACM UIUC Student Chapter
2012 – 2013 SigBot Chair, ACM UIUC Student Chapter
2012 – 2013 Student Representative, UIUC CS Department Grievance Committee
2011 – 2012 Speakers Committee, 18th Reflections Projections Conference
2011 Logistics Committee, 17th Reflections Projections Conference
2010 – 2011 VP of Leadership, MCC Chapter of the Phi Theta Kappa Honor Society
2009 – 2011 AmeriCorps Volunteer, site: Arizona Science Center
2010 VP of Administration, MCC Chapter of the Phi Theta Kappa Honor Society
2010 LeaderCorps Member, Arizona Governor’s Office
2010 Logistics Committee, Arizona National and Community Service Conference
2010 STEM Club Advisor, Orangewood Elementary School
2009 – 2010 Organizing Committee Member, MCC Beautification Project
2009 – 2010 Learn and Serve Camp Team Leader, Arizona Department of Education
2009 – 2010 Student Member, MCC Service Learning Advisory Board
2009 – 2010 Student Member, MCC Community Strengthening Allies

PROFESSIONAL ACTIVITIES

INVITED TALK 2021 CVPR Workshop – Media Forensics
INVITED TALK 2020 Visual Computing Seminar, Brown University, Providence, RI
INVITED TALK 2020 Keynote at the Amazon Computer Vision Conference
INVITED TALK 2020 CORE Seminar, MIT Lincoln Laboratory, Lexington, MA
SPRING 2020 BU Guest Lecture: Intro to Vision-Language (class – Image and Video Computing)
SPRING 2020 BU Guest Lecture: Convolutional Networks II (class – Deep Learning)
INVITED TALK 2019 ICCV Workshop – Linguistics Meets Image and Video Retrieval
INVITED TALK 2019 Accenture, Dublin, Ireland.
2019 KDD AI for Fashion Workshop Program Committee
FALL 2018 BU Guest Lecture: Intro to Recognition (class – Image and Video Computing)
AREA CHAIR ECCV’20
REVIEWER TPAMI’15’16’20’21; CVPR’17-’21; ICCV’17-21; CHI’18; IJCV’18’19; ECCV’18; BMVC’19; NeurIPS’19’20; AAAI’20; ICML’20; ACL’20’21