Benjamin D. Killeen

Ph.D. Student, Johns Hopkins University

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Summary

A Ph.D. Student at Johns Hopkins University, I am a member of the Advanced Robotics and Interests Computationally Augmented Environments (ARCADE) research group and the Computational Interaction and Robotics Laboratory (CIRL). My research interests include computer vision, machine learning, and domain generalization, focusing on applications in robotic manipulation, medical imaging, and surgical robotics.

Education

Ph.D., Computer Science, Johns Hopkins University, Baltimore, MD, USA. 08/2019 - present
With Mathias Unberath and Gregory D. Hager.

B.A., Computer Science with Honors, Physics Minor, University of Chicago, Chicago, IL, USA. 09/2015 - 06/2019
Thesis: Starting from Scratch: Deep Learning for Novel Scientific Image Analysis
With Gordon Kindlmann.

Research Experience

Research assistant, Department of Computer Science, Johns Hopkins University, Baltimore, MD, USA. 08/2020 - present
With Mathias Unberath, Gregory D. Hager.

Research Assistant, Laboratory for Computational Sensing and Robotics, Johns Hopkins University, Baltimore, MD, USA. 08/2019 - 06/2020
With Gregory D. Hager, Mathias Unberath, and Russel Taylor.
Recipient: LCSR Fellowship for Outstanding Incoming Ph.D. Students.

Research assistant, Department of Computer Science, University of Chicago, Chicao, IL, USA. 03/2018 - 08/2019
With Gordon Kindlmann.

Professional Experience

Computer Vision / AI Intern, Applied Research, Intuitive Surgical Inc., Sunnyvale, CA, USA. 06/2020 - 07/2020
With Omid Mohareri.

Software Development Intern, Cognitive Computing, Epic Systems, Verona, WI, USA. 06/2018 - 08/2018
Research Intern, IBM Research - Almaden, San Jose, CA, USA. 06/2017 - 08/2017
With Geoffry Burr.

Selected Honors

Best Graduate Project Award, Computer Integrated Surgical Systems and Technology course, Johns Hopkins University, USA. 05/2020

COVID-19 Dataset Award, Kaggle 04/2020
For our county-level dataset in [M-1].

Intuitive Surgical Best Project Award, Deep Learning course, Johns Hopkins University, USA. 12/2019
Project: Enriching Unsupervised Feature Learning via Intermediate Subtasks.
With Michael Peven, Shaoyan Pan, Matthew Pittman.

Publications

My publication list is also available on Google Scholar.

Peer-reviewed Journal Articles

A. Hundt, **B. D. Killeen**, H. Kwon, C. Paxton, GD Hager. "Good Robot!": Efficient Reinforcement Learning for Multi-Step Visual Tasks with Sim to Real Transfer. IEEE Robotics and Automation Letters, vol. 5, no. 4, pp. 6724–6731, Oct. 2020. doi: 10.1109/LRA.2020.3015448. J-2

S. Ambrogio, P. Narayanan, H. Tsai, R. M. Shelby, I. Boybat, C. di Nolfo, S. Sidler, M. Giordano, M. Bodini, N. Farinha, **B. D. Killeen**, C. Cheng, Y. Jaoudi, G. W. Burr. Equivalent-accuracy accelerated neural-network training using analogue memory. Nature, vol. 558, no. 7708, p. 60, Jun. 2018. doi: 10.1038/s41586-018-0180-5. J-1

Peer-reviewed Conference Papers

C. Gao, X. Liu, W. Gu, **B. D. Killeen**, M. Armand, R. Taylor, M. Unberath. Generalizing Spatial Transformers to Projective Geometry with Applications to 2D/3D Registration. MICCAI **(to appear)**, 2020. C-2

X. Liu, Y. Zhang, **B. Killeen**, M. Ishii, G. Hager, R. Taylor, M. Unberath. Extremely Dense Point Correspondences using a Learned Feature Descriptor. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, pp. 4847-4856, 2020. C-1

Preprints

J. Y. Wu*, **B. D. Killeen***, P. Nikutta, M. Thies, A. Zapaishchykova, S. Chakraborty, M. Unberath Changes in Reproductive Rate of SARS-CoV-2 Due to Non-pharmaceutical Interventions in 1,417 U.S. Counties. medRxiv preprint, Jun. 2020, doi: 10.1101/2020.05.31.20118687. M-2
***Equal contribution.**

B. D. Killeen, J. Y. Wu, K. Shah, A. Zapaishchykova, P. Nikutta, A. Tamhane, S. Chakraborty, J. Wei, T. Gao, M. Thies, M. Unberath. A County-level Dataset for Informing the United States' Response to COVID-19. arXiv preprint, 2020, arXiv:2004.00756. M-1

Patents

G. W. Burr and **B. D. Killeen**. 2020. Efficient Processing of Convolutional Neural Network Layers Using Analog-memory-based Hardware. 20200117986, filed March 25, 2019, and issued April 16, 2020. https://uspto.report/patent/app/20200117986. P-1

Teaching

Assistant Teaching

Machine Learning and Large Scale Data Analysis, Department of Computer Science, University of Chicago, Chicago, IL, USA 03/2019 - 06/2019
With Prof. Yali Amit.
Wrote supplementary course material and held weekly lab sessions. Link:
github.com/benjamindkilleen/lsda

Selected review: "Ben was incredibly patient during office hours and always responsive to student questions. In addition, he often presented demos during office hours or showed easier ways to handle the homework assignments; both were very helpful."
More reviews available at benjamindkilleen.com/teaching/2019-spring-lsda

Grading

Department of Computer Science, University of Chicago, Chicago, IL, USA 01/2019 - 08/2019
- Scientific Visualization
- Introduction to Computer Science I
- Introduction to Computer Science II

Tutoring

Topics in Machine Learning, Baltimore, MD, USA. 06/2020 - present
I tutor young people (middle- and high-school age) who are interested in CS and ML.
More info at benjamindkilleen.com/teaching/2020-tutoring.

Selected Coursework

Graduate

Nonlinear Optimization II
Computer Integrated Surgery II
Computer Integrated Surgery I
Deep Learning

Undergraduate

GPA: 3.81
Unsupervised Learning*
Computer Vision
Machine Learning and Large Scale Data Analysis
Operating Systems
Honors Combinatorics
Honors Algorithms
Honors Discrete Mathematics
Scientific Visualization
Programming Languages
Networks and Distributed Systems

*Graduate level.

Creative Interests

Creative nonfiction: benjamindkilleen.com/blog
Science Fiction: novel available by request.

Metadata

Available
- online: benjamindkilleen.com/markdown-cv.
- as a PDF: benjamindkilleen.com/files/cv.pdf.

Created based on markdown-cv by Eliseo Papa with styles based on David Whipp.

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