

Brian Anthony Smith

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Research Interests

Human-computer interaction (HCI), game design, assistive technologies, data mining for HCI

Education

Columbia University, Graduate School of Arts and Sciences, New York, NY

Ph.D. in Computer Science expected May 2018

Advisors: Prof. Shree K. Nayar and Prof. Steven K. Feiner

M.Phil., Computer Science, Feb 2015 GPA: 4.00

Candidacy Exam: Human Computation and Crowd-Powered Vision

Columbia University, The Fu Foundation School of Engineering and Applied Science, New York, NY

M.S., Computer Science, Feb 2011 GPA: 4.03

B.S., *summa cum laude*, May 2009 Major: Computer Science Minor: Economics GPA: 4.10

Relevant Coursework: Foundations of Graphical Models, Adv. Software Engineering, Machine Learning, Game Design & Production, Operating Systems, Computer Vision, 3D User Interfaces & Augmented Reality

Professional Experience

- 2009–Present **Columbia University**, New York, NY
Graduate Research Assistant, Computer Vision Laboratory & Computer Graphics and User Interfaces Laboratory
- Performed research in human-computer interaction, assistive technologies, and data mining.
- 2008–Present **van Biema Value Partners, LLC**, New York, NY
Webmaster
- Create, update, and maintain a Web site for the value-only fund of funds.
- 2014 **Google Research**, Mountain View, CA
Software Engineering Intern, Ph.D., Mobile Interaction Research Group (MIRG)
- Computationally optimized touchscreen keyboards for gesture typing. Published paper at CHI 2015.
- 2012 **Google Inc.**, New York, NY
Software Engineering Intern, Ph.D., Local Identity Team
- Designed a new method for aggregating business listings in Google Maps and Google+ Local. An estimated 2 billion listings were improved in testing.
- 2009–2012 **Kimera, LLC** (non-profit Columbia-based startup), New York, NY
Designer, Producer, and Developer
- Co-developed the Google-funded Bigshot camera and educational Web site (bigshotcamera.org).
 - Designed and produced Bigshot Connect, a now-defunct photo-sharing Web site for kids.
 - Co-instructed educational workshops with kids in New York, India, Vietnam, and Japan.
- 2010 **Funtank, LLC**, New York, NY
Game Design and Development Intern
- Helped design and prototype a Facebook social game based on fellowship and travel.
- 2007 **Banc of America Securities** (now **Bank of America Merrill Lynch**), New York, NY
Sophomore Summer Analyst (Rotational Program)
- Created client-side analytics tools in the Global Structured Products: Technology Group.
 - Performed market research and company analysis in the Financial Institutions Group.
- 2007 **Red Monsoon**, New York, NY
Web Development & Graphic Design Intern
- Designed and created a Web site for the non-profit performing arts collaborative.

Awards & Honors

- 2015–2017 **“From Data to Solutions” Integrative Graduate Education & Research Traineeship (IGERT)**, NSF
A 2-year interdisciplinary data science training program. Covers full tuition, fees, and travel expenses.

- 2013, 2015 **Computer Science Service Award (×2)**, Dept. of Computer Science, Columbia University
Awarded to the Ph.D. students whose service contributions to the department are in the top 10%.
- 2012 **Extraordinary Teaching Assistant Award**, Columbia Engineering
Awarded to the 19 TAs throughout the school with the highest Fall 2011 student evaluations (\$500).
- 2011–2014 **National Defense Science and Engineering Graduate (NDSEG) Fellowship**, U.S. Dept. of Defense
\$31,000/year + tuition + fees for 3 years. There were 200 awardees from over 2,900 applications.
- 2009–2010 **Center for Technology, Innovation, & Community Engagement Fellowship**, Columbia Engineering
Covers half-tuition for a year for 10 PhD students each year. I was the first and only MS student awardee.
- 2009 **Computer Science Scholarship Award (Departmental Award)**, Columbia Engineering
Awarded to the top computer science graduate each year.
- 2009 **Costantino Colombo Outstanding Leadership Service Award**, Columbia Engineering
Awarded to a graduating student for enhancing undergraduate student life. I was the inaugural awardee.
- 2007–2009 **Benjamin A. Tarver, Jr. Memorial Scholar**, Columbia Engineering
An endowed grant that covered full undergraduate tuition and fees for 2 years.
- 2005–2009 **C. Prescott Davis Scholar**, Columbia Engineering
A 4-year co-curricular program awarded to the top 2% of applicants to Columbia Engineering.

Peer-Reviewed Conference Publications

- [C4] **Smith, B. A.** & Nayar, S. K. (2018). The RAD: Making Racing Games Equivalently Accessible to People Who Are Blind. *To appear in the Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI 2018)*.
- [C3] **Smith, B. A.** & Nayar, S. K. (2016). Mining Controller Inputs to Understand Gameplay. *Proceedings of the 29th Annual ACM Symposium on User Interface Software and Technology (UIST 2016)*. 157–168. [Acceptance Rate: 20.6%]
Paper: <https://doi.org/10.1145/2984511.2984543> Talk: https://youtu.be/_a03zIXoTYU
- [C2] **Smith, B. A.**, Bi, X., & Zhai, S. (2015). Optimizing Touchscreen Keyboards for Gesture Typing. *Proceedings of the 2015 CHI Conference on Human Factors in Computing Systems (CHI 2015)*. 3365–3374. [Acceptance Rate: 22.9%]
Paper: <https://doi.org/10.1145/2702123.2702357> Talk: <https://youtu.be/0PHjN4GjSi8>
- [C1] **Smith, B. A.**, Yin, Q., Feiner, S. K., & Nayar, S. K. (2013). Gaze Locking: Passive Eye Contact Detection for Human–Object Interaction. *Proceedings of the 26th Annual ACM Symposium on User Interface Software and Technology (UIST 2013)*. 271–280. [Acceptance Rate: 19.6%]
Paper: <https://doi.org/10.1145/2501988.2501994>

Peer-Reviewed Workshops

- [W1] Bi, X., **Smith, B. A.**, & Zhai, S. (2015). Keyboard Layout Optimization. *Proceedings of the CHI 2015 Workshop on Principles, Techniques, and Perspectives on Optimization and HCI*.

Leadership & Professional Service

- 2014–Present **Peer Reviewer for Academic Conferences & Journals**
Conferences:
 - ACM UIST 2014, 2015, 2016
★ *Special Recognition for Exceptional Reviewing* ×2 (UIST 2015, UIST 2016) ★
 - ACM CHI 2015, 2016, 2017, 2018
★ *Special Recognition for Exceptional Reviewing (CHI 2016)* ★
 - ACM VRST 2017
 Journals:
 - PACM Interact. Mob. Wearable Ubiquitous Technol. (2017)
 - Elsevier Int. J. Hum. Comp. Stud. (2016)
- 2012 **Columbia University Department of Computer Science**, New York, NY
MS Admissions Committee Volunteer
 - Reviewed ~150 applications and conducted phone interviews for the department’s MS Program.
- 2006–2009 **Columbia University Undergraduate Recruitment Committee**, New York, NY
SEAS and Scholars Chair, Advisory Board (2007–2009)

- Helped recruit, select, train, and manage Undergraduate Recruitment Committee volunteers.
★ *Most Likely to Convince Someone to Come to Columbia Award* ★

Senior Interviewer (2007–2009)

- Conducted regional interviews of high school applicants to Columbia from underserved areas.

2005–2008

Columbia University Scholar's Program (CUSP) Alliance, New York, NY

Vice President of Operations (2006–2008)

- Developed policies and structures of governance for the 24 officers and 7 committees.

Mentoring & Advising

2011–Present **Research Project Students Advising**, Columbia University

- Julie Chien (M.S.; Spring 2017)
- Ray Tsai (M.S.; Spring 2017)
- Jake Bullock (B.S.; Spring 2016)
- Akash Nayar (Secondary School; Summer 2015)
- Olivia Winn (B.S., Ph.D.; Spring 2014 – Fall 2014)
- Robert Colgan (Ph.D.; Fall 2014)
- Sophia Erbo Lee (M.S.; Fall 2011 – Spring 2012)
- Vu Xuan Linh (M.S.; Spring 2011)
- Tristan Pavlik (Secondary School; Fall 2010)

2011–Present **Egleston Scholars Enhanced Advising Committee**, Center for Student Advising, Columbia Univ.

- Advised current students, recruited prospective students, and helped shape pedagogy for this comprehensive advising program for top 1% of Columbia Engineering undergraduate admits.

Students Advised (in alphabetical order):

- Eshan Agarwal, Arvind Chava, Jessica Cheng, Campbell Donnelly, Haris Durrani, Drew Feldman, Fei-Tzin Lee, Kai-Zhan Lee, Sang Jun Park, Lucas Schuermann, Steven Shao, SonYon Song, Kui Tang (Next Stop: Ph.D. student at Columbia), Morgan Thompson, James Xu, Kevin Zeng, Alek Zieba

2007–Present **Career and Professional Advising**

- Su Ji Park (B.S.; Fall 2017)
- Ian Huang (B.S.; Summer–Fall 2017; Next Stop: Intel internship)
- Daniel Sims (Research Staff; Spring–Summer 2017)
- Sam Cohen (B.S.; Spring 2016–Fall 2017)
- Chun-Yu Tsai (Ph.D.; Fall 2015; Next Stop: Facebook Research)
- Jiongxin Liu (PhD; Spring 2015; Next Stop: Google)
- Sean Pagaduan (M.F.A.; Fall 2014 & Fall 2015; Next Stop: Union Theological Seminary)
- Fiamma van Biema (B.S.; Fall 2013; Next Stop: Teachers College, Columbia U. M.A. graduate)
- Hua Papoj Thamjaroenporn (B.S.; Fall 2011; Next Stop: Ph.D. student at Columbia)
- Babawande Afolabi (B.S.; Fall 2007; Next Stops: Goldman Sachs internship, Stanford M.B.A. graduate)
- Kwesi Thomas (B.S.; Fall 2007; Next Stop: Deloitte Consulting)

Teaching Experience

2009–2013 **Teaching Assistant**, Columbia University

Graduate Level Courses:

- COMS W6732: Computational Imaging (Fall 2013)
Instructor: Prof. Shree K. Nayar
- COMS W4731: Computer Vision (Fall 2011)
Instructor: Prof. Shree K. Nayar
★ *Extraordinary Teaching Assistant Award* ★
- COMS E6998: Advanced Game Development (Spring 2011)
Instructor: Prof. Bernard Yee
- COMS W4995: Game Design and Production (Fall 2010)
Instructor: Prof. Bernard Yee
- COMS E6998: Advanced Game Development (Spring 2010)
Instructor: Prof. Bernard Yee

Undergraduate Level Courses:

- ENGI EI 102: Design Fundamentals using Advanced Computer Technologies (Spring 2010)
Instructor: Prof. Jack McGourty
- ENGI EI 102: Design Fundamentals using Advanced Computer Technologies (Fall 2009)
Instructor: Prof. Jack McGourty

2010–2012 **Co-Instructor**, Kimera, Inc. (non-profit Columbia-based startup)

- Co-instructed Bigshot Camera STEM workshops with kids in New York, India, Vietnam, and Japan.

2010 **Co-Instructor**, Center for Technology, Innovation, and Community Engagement (CTICE) STEM Club

- A hands-on afterschool program at IS 195 targeted for fifth grade students struggling in science.
- Designed curriculum and hands-on projects. Co-instructed with Guru Krishnan.

2006–2015 **Private Tutor**, New York, NY

College Level Subjects:

- COMS W4731: Computer Vision (Columbia University; Fall 2017)
- MATH 101: Concepts of Mathematics [Logic and set theory] (Nassau Commun. Col.; Summer 2017)
- MATH 125: Precalculus (Hunter College, City University of New York; Fall 2015)
- COMS W1004: Introduction to Computer Science and Programming in Java (Columbia; Spring 2014)
- ECON W1105: Principles of Economics (Columbia University; Fall 2013)
- SCNC C1000: Frontiers of Science (Columbia University; Fall 2013)
- URBS UN3200: Spatial Analysis: GIS Methods and Case Studies (Barnard College; Spring 2013)
- URBS V3562: The City in Beta: Public Participation in the Design Process (Barnard College; Fall 2012)
- MATH VI201: Calculus III (Columbia University; Fall 2012)
- SCPP BC 3335: Environmental Leadership, Ethics, and Action (Barnard College; Fall 2011)
- EESC BC1002: Environmental Science II (Barnard College; Spring 2011)
- EESC BC3014: Field Methods in Environmental Science (Barnard College; Fall 2010)
- MATH VI101: Calculus I (Columbia University; Fall 2009)
- GRE Math Prep

High School Level Subjects:

- Algebra I, Geometry, Algebra II, Pre-Calculus, Calculus I, Physics I, Chemistry I, SAT Prep
- Tutored for both English- and French-speaking high schools

Invited Talks and Panel Appearances

- Jun. 2017 **“The Bigshot Camera: A Case Study in Making Technology Educational”**
Engineering for Humanity strategic discussion forum of faculty. Columbia Univ., New York, NY
- Sep. 2014 **“Game Design: An Introduction”**
d:Tech NYC seminar at Cornell Tech, New York, NY.
- Aug. 2010 **“The Potential and Pitfalls of Tutoring/Mentoring and Service-Learning”**
New York Metro Area Partnership for Service Learning (NYMAPS) panel, New York, NY.
- Jul. 2010 **“Composting”**
Summer Youth Employment Program (SYEP) lecture. NYC Dept. Parks and Recreation, New York, NY.
- Jul. 2010 **“Alternative Fuel Vehicles”**
Summer Youth Employment Program (SYEP) lecture. NYC Dept. Parks and Recreation, New York, NY.
- Jul. 2010 **“Static Forces”**
WINGineering (Women in Engineering) summit. NYC Dept. Parks and Recreation, New York, NY.
- Jul. 2010 **“Youth and Cybersecurity”**
Moderated focus group in partnership with NGO. East West Institute, New York, NY.

Skills

Proficient with Java, Python, Swift, C, C++, Unity, ActionScript 3, Flash, Photoshop, Dreamweaver, and MS Office programs. Familiar with MATLAB, SQL, PHP, OpenGL, Lisp, AWK, VBA, and ArcGIS.

References

Shree K. Nayar

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