LEE STEARNS
CURRICULUM VITAE

DOCTORAL CANDIDATE | COMPUTER SCIENCE
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PROFESSIONAL SUMMARY

I am a PhD candidate and research assistant with a research focus that spans multiple disciplines including computer vision and machine learning, human-computer interaction and accessibility, and physical prototyping. I am currently working to complete my dissertation, which involves developing and evaluating a wearable camera system that augments the sense of touch to assist people with visual impairments throughout their daily lives.

I also provide consulting services for software and web development when my research schedule permits. I have designed and built utilities to process and visualize medical image data, as well as mobile and web applications to assist professional and amateur shooters in calculating ballistics while using a client's custom rifle scope.

EDUCATION

Present **(Expected Aug 2018)**	Doctor of Philosophy, Computer Science University of Maryland, College Park	**Advisors:** Dr. Jon E. Froehlich Dr. Rama Chellappa
2012	Master of Science, Computer Science University of Maryland, College Park	**Advisor:** Dr. Rama Chellappa
2009	Bachelor of Science, Computer Science, Minor in Mathematics University of Maryland, College Park	

AWARDS & SCHOLARSHIPS

2014	Received International Conference Student Support Award, Graduate School, University of Maryland
2014	Received John D. Gannon Travel Award, Department of Computer Science, University of Maryland
2008	Awarded "Outstanding Team Leader", Gemstone Program, University of Maryland
2008	Accepted into Corporate Scholars Program, University of Maryland
2005	Accepted into Gemstone Program, University of Maryland
2005	Awarded Presidential Scholarship, University of Maryland

TECHNICAL SKILLS

Coding: Proficient coding in C#, Java, Swift, Objective C, C++, and Javascript, and some experience with Python, C, Visual Basic. Proficient developing in Visual Studio and XCode.

Designing: Proficient with Microsoft Word, Excel, Powerpoint, and with Adobe Photoshop, Illustrator, Premiere.

Prototyping: Experience with microcontrollers and basic circuitry. Experience with physical design tools, including 3D printing and laser cutting.

RESEARCH & WORK EXPERIENCE

2013–Present **Graduate Research Assistant—Makeability Lab—University of Maryland, College Park**
Designed, built, and tested assistive technology for people with visual impairments, especially wearable cameras and other small sensors worn on the finger. Applications included reading and exploring printed text and recognizing on-body gestures to control a mobile device. Built prototype hardware using 3D printing, laser cutting, soldering, and low-fidelity prototyping. Developed algorithms to recognize content beneath the user's finger, including text, colors and textures, and skin or clothing patterns, as well as dynamic gestures.

2017   **Research Intern—Microsoft Research, Ltd—Cambridge, United Kingdom**

Conducted research with wearable and stationary cameras to assist users with visual impairments in social situations. Applied existing hardware and deep learning services to develop applications and demonstrations for internal use.

2010–2013   **Graduate Research Assistant—UMIACS—University of Maryland, College Park**

Researched computer vision techniques for object recognition and camera motion tracking. Developed a prototype navigation system for the blind combining object and feature detection and tracking with inertial and GPS data, along with a speech menu and feedback system and directional audio cues.

2009–Present   **Software Developer and IT Consultant—Self-employed, Laurel, MD**

Develop desktop and mobile software and IT solutions for clients. Projects of interest include developing medical image viewing and processing techniques to assist in mapping the neural pathways in the human brain, and designing and implementing an interactive web and mobile application to demonstrate a client's targeting reticle.

2009   **Software Development Intern—DfR Solutions, College Park, MD**

Updated software for predicting the thermal output of circuit boards using the finite element method. Developed a tool to create 2D triangular and quadrilateral meshes of circuit boards for use with finite element software.

2008   **Software Development Intern—Apptis, Inc., Bethesda, MD**

Developed a web application for internal use to allow for easier interaction with portions of the company's database. Updated an outdated and sparsely documented internal hardware API for easier usage and to allow for new features.

2007–2008   **Software Development Intern—Carematic Systems, Inc., Annapolis, MD**

Developed utilities to automate the backup of portions of the company's databases and file systems. Created an attendance tracking module for the company's online software package.

PUBLICATIONS

2017   **L. Stearns**, U. Oh, L. Findlater, J. E. Froehlich, "TouchCam: Realtime Recognition of Location-Specific On-Body Gestures to Support Users with Visual Impairments," in *IMWUT, Dec 2017.*

2017   **L. Stearns**, V. DeSouza, J. Yin, L. Findlater, J. E. Froehlich, "Augmented Reality Magnification for Low Vision Users with the Microsoft Hololens and a Finger-Worn Camera," in *Proc. ASSETS 2017 (Poster).*

2017   A. J. Medeiros, **L. Stearns**, L. Findlater, C. Chen, J. E. Froehlich, "Recognizing Clothing Colors and Textures using a Finger-Mounted Camera: An Initial Investigation," in *Proc. ASSETS 2017 (Poster).*

2017   U. Oh, **L. Stearns**, A. Pradhan, J. E. Froehlich, L. Findlater, "Investigating Microinteractions for People with Visual Impairments and the Potential Role of On-Body Interaction," in *Proc. ASSETS 2017.*

2016   **L. Stearns**, U. Oh, B. J. Cheng, L. Findlater, D. Ross, R. Chellappa, J. E. Froehlich, "Localization of Skin Features on the Hand and Wrist from Small Image Patches," in *Proc. ICPR 2016.*

2016   **L. Stearns**, R. Du, U. Oh, C. Jou, L. Findlater, D. A. Ross, J. E. Froehlich, "Evaluating Haptic and Auditory Directional Guidance to Assist Blind People in Reading Printed Text Using Finger-Mounted Cameras," in *TACCESS, Nov 2016.*

2016   J. Hong, **L. Stearns**, T. Cheng, J. E. Froehlich, D. Ross, L. Findlater, "Evaluating Angular Accuracy of Wrist-Based Directional Guidance for Hand Movement," in *Proc. GI 2016.*

2014   **L. Stearns**, R. Du, U. Oh, Y. Wang, L. Findlater, R. Chellappa, J. E. Froehlich, "The Design and Preliminary Evaluation of a Finger Mounted Camera and Feedback System to Enable Reading of Printed Text for the Blind," in *Proc. ECCV 2014 (Workshop on Assistive Computer Vision and Robotics).*

2008   S. Caperna, C. Cheng, J. Cho, V. Fan, A. Luthra, B. O'Leary, J. Sheng, **L. Stearns**, A. Sun, R. Tessler, P. Wong, J. Yeh, B. Bobo, C. Tang, R. Chellappa, "Developing a Real-Time Identify-and-Locate System for the Blind," in *Proc. ECCV 2014 (Workshop on Computer Vision Applications for the Visually Impaired).*