Lilian de Greef

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SUMMARY

I am a graduating PhD student at the University of Washington with **NSF** and **Microsoft Research fellowships**, advised by Shwetak Patel in the **Ubiquitous Computing Lab**. Within the broad spectrum of ubiquitous computing, my interests include **computer vision, embedded systems, machine learning, HCI,** and **mHealth**. My research focuses on integrating HCI, ML, and computer vision to improve medical care with commodity hardware. Outcomes of my work are under active **commercial development** with the potential to change medical standards of care.

EDUCATION

University of Washington (2012 – present)
Ph.D. Student, Computer Science
Area: Ubiquitous Computing
Advisor: Dr. Shwetak Patel

Harvey Mudd College (2008 – 2012)
Bachelor of Science, Computer Science
☆ President Scholar (full tuition merit scholarship)
Graduated with distinction
GPA: 3.6/4.0

SKILLS

Programming: Python, C++, OpenCV, scikit-learn, Pandas, MXNet, Altair, Java, Arduino, SystemVerilog, Objective-C , C#, Scheme, Prolog

Software: SolidWorks, Autodesk Inventor, Photoshop

Hardware: 3D printing, laser cutting, fabrication for eTextiles, machining for metal and wood

Languages: English; conversational in Dutch, French; familiar with Chinese, German, Hungarian

PROJECT EXPERIENCE

Graduate Research, University of Washington 9/2012 – present
Advisor: Shwetak Patel
Primarily investigating how to use smartphone cameras to screen newborns for dangerous levels of jaundice, or yellowing of the skin, in close collaboration with UW Medical Center. Developed data collection procedures and software, applying computer vision to parse images and machine learning to estimate jaundice levels. Work thus far has resulted in two publications (one awarded as best paper nominee), two patents, and commercial development.

Research Intern, Microsoft Research Redmond 6/2018 – 9/2018
Manager: Jessica Lundin
Worked on improving CHAMP, a system to monitor infants with single ventricle heart disease. Communicated with medical partners at Children's Mercy Hospital, concretized technical goals, formulated methodology, wrangled and pre-processed data, developed prediction algorithms, and drafted the team's future work. Publication in progress.

Research Intern, Microsoft Research Redmond 6/2015 – 9/2015
Manager: Merrie Morris
Conceived and developed a prototype of TeleTourist, a system that uses video calls with strangers to share experiences for people with mobility restrictions. Interviewed individuals with mobility restrictions as formative work, designed system features, and implemented a subset of them for a prototype. Presented the work as a poster at CSCW '16 and resulted in a patent.

Research Science Intern, Amazon 6/2014 – 9/2014
Manager: Jim Curlander
Designed, developed, and evaluated eyes and head tracking based user interface elements for enhanced reality interfaces in fulfillment centers. Combined concepts from computer graphics with HCI Produced several prototypes, demonstrated the system in its intended environment. Resulted in a patent.

Microsoft Computer Science Clinic, Harvey Mudd College 9/2011 – 5/2012
Faculty Advisor: Z Sweedyk, Microsoft Liaison: Cati Boulanger
Designed and developed technology to motivate and assess rehabilitation for stroke patients affected in their upper extremities, using the Microsoft Surface in a team of four. Interviewed stroke patients and physical therapists, designed rehabilitative game, produced prototype, and ran user study with stroke patients. Published at CHI '13.

Undergraduate Research, Harvey Mudd College 6/2011 – 8/2011
Advisor: Zachary Dodds
Created and explored vision-based localization algorithms for aerial robots, in team of five students. Developed and prototyped computer vision-based autonomous cooperation between a ground-based and airborne robot and localization for a toy quadrotor helicopter using only its built-in camera. Presented work as demos at GCER '11 and AAAI '11, a talk at CWIC '12, and a publication in TePRA '12.

Undergraduate Research, Harvey Mudd College 6/2010 – 8/2010
Advisor: Christine Alvarado
Developed software for tablet PCs to recognize and simulate hand-drawn logic circuits. Focused on methods to refine sketch recognition and refactoring code. Helped the other five team-members with user interface design and circuit simulation. Resulting software was rolled out and used in Harvey Mudd College's introductory computer science course.

Engineering Design Project, Harvey Mudd College 3/2009 – 5/2009
Advisors: Lori Bassman & Patrick Little, Client: Rodney Shannon
Designed device to automatically open and close a chicken coop for a client in Australia, in a team of four students. It enables chickens to go outside early and be safe from foxes when they roost at night, regardless of the client's availability. We designed and developed a system, including a functional prototype, regularly communicated with our client, and delivered a final tech memorandum & presentation.

PATENTS

Colburn, R.A., Curlander, J.C., Gorumkonda, G.K., de Greef, L., inventors; Aug. 2017. **Perspective-Aware Projected User Interfaces**. United States patent US 9723248 B1.

Quinn, K.I., Morris, M., Venolia, G., Tang, J., de Greef, L., inventors; Mar. 2017. **Immersive Telepresence**. United States patent US 9591260 B1.

Taylor, J.A., Patel, S.N., Stout, J.W., de Greef, L**.**, Goel, M., Larson, E.C., inventors; Dec. 2015. **Systems, Devices, and Methods for Estimating Bilirubin Levels**. United States patent US 20150359459 A1.

Taylor, J.A., Patel, S.N., Stout, J.W., de Greef, L**.**, Goel, M., Larson, E.C., inventors; Oct. 2014. **Estimating Bilirubin Levels**. United States patent US WO2014172033 A1.

PUBLICATIONS

Taylor, J.A., Stout, J.W., **de Greef, L**., Goel, M., Patel, S., Chung, E.K., Koduri, A., McMahon, S., Dickerson, J., Simpson, E.A. and Larson, E.C., 2017. *Use of a Smartphone App to Assess Neonatal Jaundice.* Pediatrics, p.e20170312.

de Greef, L., Goel, M., Seo, M.J., Larson, E.C., Patel, S.N., Stout, J.W., Taylor, J.A. *BiliCam: Using Mobile Phones to Monitor Newborn Jaundice*. ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) 2014 ***Best paper nominee***

Boulanger, C., Boulanger, A., **de Greef, L.**, Kearney, A., Sobel, K., Transue, R., Sweedyk, Z., Dietz, P., Bathiche, S. *Stroke Rehabilitation with a Sensing Surface*. 2013 ACM SIGCHI Conference on Human Factors in Computing Systems Proceedings (CHI) 2013

Berezny, N., **de Greef, L.**, Jensen, B., Sheely, K., Sok, M., Lingenbrink, D., Dodds, Z. *Accessible Aerial Autonomy.* IEEE International Conference on Technologies for Practical Robot Applications (TePRA) 2012

ADJUNCT PROCEEDINGS

Poster: **de Greef, L.**, Morris, M.R., Inkpen, K. *TeleTourist: Immersive Telepresence Tourism for Mobility-Restricted Participants*. ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), San Francisco, CA, February 2016

Poster: **de Greef, L.,** Goel, M., Seo, M.J., Larson, E.C., Patel, S.N., Stout, J.W., Taylor, J.A. *BiliCam: Using Mobile Phones to Monitor Newborn Jaundice*. ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp) 2014

Demonstration: Berezny, N., **de Greef, L.**, Jensen, B., Sheely, K., Sok, M., Dodds, Z. *Accessible Aerial Autonomy via ROS*. Association for the Advancement of Artificial Intelligence (AAAI), San Francisco, CA, June 2011

Demonstration: Berezny, N., **de Greef, L.**, Jensen, B., Sheely, K., Sok, M., Dodds, Z. *Autonomous Robot Cooperation*. Global Conference on Educational Robotics (GCER), Orange County, CA, July 2011

HONORS AND AWARDS

National Science Foundation Graduate Research Fellowship: 2013 – present
Microsoft Research PhD Fellowship: 2015 – 2017
Microsoft Research Graduate Women's Scholar: 2013 – 2014
Marilyn Fries Endowed Regental Fellowship: 2012 – 2013
President Scholar's Program (4 year full-tuition merit scholarship): 2008 – 2012
University of Washington CSE Three-Sixty Fellowship Fund: 2012
People's Choice Prize at UW CSE's Industry Affiliates Meeting: 2014
Graduated Harvey Mudd College with honors in computer science: 2012
Graduated Harvey Mudd College with honors in humanities, social sciences, and the arts: 2012
Dean's List: Spring 2009, Fall 2009, Fall 2010, Fall 2011, Spring 2012
Davis Prize (top student in engineering design course): 2009

TEACHING & MENTORING

Predoctoral Instructor, Data Structures and Algorithms for Non-Majors Summer 2017
Paul Allen School of Computer Science and Engineering, University of Washington
Prepared and delivered lectures with interactive activities for a class of 67 students ranging from high school to graduate school students with a diverse set of majors. Managed a team of 5 teaching assistants; prepared homework assignments; wrote, proctored, and graded exams; hosted office hours; and mentored some students one-on-one outside of office hours. Rated 4.4/5 in course review.

Teaching Assistant, Data Structures and Algorithms for Non-Majors Summer 2016
Paul Allen School of Computer Science and Engineering, University of Washington
Prepared and ran review sections, hosted and tutored students in office hours, graded homework assignments, and helped proctor and grade exams for a class of 78 students. Worked in a team with two other teaching assistants.

Graduate Mentor, Undergraduate Research in the Ubicomp Lab 2014 - 2015
Paul Allen School of Computer Science and Engineering, University of Washington
Mentored two undergraduate students to participate in research projects. Helped them learn and develop skills for applying computer vision. Also helped one practice skills for developing in iOS.

Grader and Tutor, Multiple Courses 2010 - 2012
Computer Science Department, Harvey Mudd College
Tutored students in office hours and graded homework for multiple semesters. Tutored and graded for Principles of Computer Science in fall 2010, Data Structures and Program Development the other terms.

TALKS

See What You Can Be. TUNE House International Women's Day Event: You Can't Be What You Can't See, Seattle, WA, 8 March 2019 **(Invited Speaker)**

BiliCam: using Smartphones to Monitor Newborn Jaundice. IBM India, Bangalore, India, 4 January 2019 **(Invited Speaker)**

Health @ the ubicomplab. Women in Science & Engineering Conference (WiSE Conference), Seattle, WA, 18 February 2017 **(Invited Speaker and Panelist)**

Smart Care through Smartphones. Tintash Lahore (Software Company), Lahore, Pakistan, 16 January 2018 **(Invited Speaker)**

BiliCam: Using Mobile Phones to Monitor Newborn Jaundice. ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp), Seattle, WA, 16 September 2014

Using Mobile Technology to Monitor Bilirubin and Diagnose Jaundice in Infants. Global WACh Seminar Series, Seattle, WA, 12 February 2014 **(Invited Speaker)**

Ubiquitous Computing: Our Approach to Technology Innovations. Northwest Regional Women in Computing (NWrWIC), Portland, OR, 19 October 2013 **(Distinguished Speaker)**

Stroke Rehabilitation with the Microsoft Surface. Harvey Mudd College Projects Day, Claremont, CA, 1 May 2012

Microsoft Surface for Stroke Rehabilitation. Celebration of Women in Computing in Southern California (CWIC SoCal), Santa Ana, CA, 14 April 2012

Accessible Aerial Autonomy. Celebration of Women in Computing in Southern California (CWIC SoCal), Santa Ana, CA, 14 April 2012.

Accessible Aerial Autonomy. Harvey Mudd College Computer Science Colloquium, Claremont, CA, 8 September 2011

LogiSketch: An Intuitive System for Sketching and Simulating Logic Circuits. Harvey Mudd College Computer Science Colloquium, Claremont, CA, 21 October 2010