

Nahom Minassie Beyene

- Aspiring contributor to multi-disciplinary teams who seek to advance analytic capabilities for process automation with humans-in-the-loop
- Accomplished (Mechanical, Aerospace, Biomechanical, Rehabilitation, and Research) Engineer in the areas of product development, user assessment, and policy analysis at the intersections of transportation, health considerations (i.e. disability), or technology modernization
- Well-versed in regulatory and strategic design strategies for automated vehicle variants on the spectrum of assisted to autonomous driving
- Experienced researcher/lead for studies and analysis within federally-funded R&D centers in support of requirements analysis, user-centered design, data analytics, business process redesign, and simulation studies.

Academic Training:

University of Pittsburgh, **Doctor of Rehabilitation Sciences**, 2013

Dissertation Title: *The Synthesis of NAViSection: Modernizing Driver Rehabilitation Programs to Encompass Intelligent Vehicle Technologies*

Dissertation Committee: Rory A. Cooper, PhD (Chair and Advisor);

Aaron Steinfeld, PhD; Amy Lane, OTR/L, CDRS; Katherine Seelman, PhD; Thomas Songer, PhD

Stanford University, **Masters of Science in Engineering: Biomechanical**, 2004

University of Texas at Austin, **Bachelors of Science, Mechanical Engineering**, 2002

Texas Academy of Mathematics & Science, **High School Diploma***, 1998

** Based at University of North Texas; Earned 66 transferable, in-state college credits*

Work Experience:

Engineer

RAND Corporation – Engineering & Applied Sciences, Pittsburgh, PA, June 2017 – Present

TSA Enterprise Data and Information
Management

FEMA Operational Capability & Requirements

Requirements Analysis for Small Multipurpose

AI-Powered Homes for Elder Healthcare

Equipment Transport

Associate Engineer

RAND Corporation – Engineering & Applied Sciences, Pittsburgh, PA, June 2015 – June 2017

Automated Technology Impacts to Force
Structure

Cyber Threats to Automated Transportation
and Liability Implications

Human Centered Design Techniques to Launch
Process Improvement Initiatives

Review and Assessment of Internal Control
Systems and Processes

LabVIEW Development Contractor

Fluid Care Center – Schroeder Industries, Pittsburgh, PA, February 2015 – June 2015

Mirroring sensor value displays into LabVIEW

Safety analysis of test automation routine

RS-232 device communication for automation

Data logging of test processing conditions

Software Quality Assurance Intern

WebKite, Pittsburgh, PA, June 2014 – November 2014

Design of test cases for code review

Reporting of results in TestLodge/Lighthouse

Exploratory and manual regression testing

Inspection per Lead UX designer wireframes

Founder & CEO

Navity, Inc., Pittsburgh, PA, January 2014 – Present

Development of NAViSection System

Explorer of joint venture, strategic and
investor relationships

Lead for business and fund-raising strategies

Graduate Research Assistant

Human Engineering Research Laboratories, Pittsburgh, PA, August 2007 – December 2013

Production of surveys/questionnaires

Development and evaluation of automated
event detection system

Coordination of international research

Collection of data via Ethnographic methods

Implementation of human subject research

Aerospace Engineer, GS 12

NASA – Johnson Space Center, Houston, TX, July 2004 – August 2007

Resolution for project review item discrepancies

Management of collaborative research

Simulation of dynamic systems and analysis

Publication of hardware design methods

Design and stress analysis of testing brackets

Graduate Co-op Employee, GS 9

NASA – Johnson Space Center, Houston, TX, June 2003 – July 2004

Reconfiguration modeling for interfaces of US and Russian treadmill systems

Analysis of human factors considerations for accessibility of touchscreen exercise log interface

Student Co-op Employee, GS 6

NASA – Johnson Space Center, Houston, TX, Jan. 2000 – Dec. 2001

Structuring of data for exercise device comparison study

Design and fabrication of active training mock-up barrier in International Space Station Module

Contribution to requirements for resistive exercise device in Crew HealthCare System (CHeCS)

Publications and Presentations:

Selected RAND Publications (Others Not Available to the Public)

RR-2972-RC 2/26/2020 **How to analyze the cyber threat from drones:** background, analysis frameworks, and analysis tools

Best, Katharina Ley; Schmid, Jon; Tierney, Shane.; Awan, Jalal; Beyene, Nahom M.; Holliday, Maynard A.; Khan, Raza; Lee, Karen.

RR-2406-RC 2/12/2020 **Automating Army Convoys:** Technical and Tactical Risks and Opportunities

McKay, Shawn; Boyer, Matthew E.; Beyene, Nahom M.; Lerario, Michael; Lewis, Matthew W.; Stanley, Karlyn D.; Steeb, Randall; Wilson, Bradley; Giglio, Katheryn

RR-2654-RC 7/15/2019 **When autonomous vehicles are hacked, who is liable?**

Winkelman, Zev.; Buenaventura, Maya; Anderson, James M.; Beyene, Nahom M.; Katkar, Pavan; Baumann, Gregory Cyril

RR-2898-A 5/17/2019 **Core competencies for amputation rehabilitation**

Etchegaray, Jason Michel.; Krull, Heather.; Holliday, Stephanie Brooks.; Xenakis, Lea; Rostker, Bernard; Beyene, Nahom M.; Ahluwalia, Sangeeta C.; Piquado, Tepring.; Chan, Edward Wei-Min; Clague, Angela.

RR-2171-AF 7/9/2018 **Evaluating an operator physical fitness test prototype for Tactical Air Control Party and Air Liaison Officers:** a preliminary analysis of test implementation

Robson, Sean.; McCausland, Tracy C.; Cerully, Jennifer L.; Pezard, Stephanie.; Raaen, Laura.; Beyene, Nahom.

Journal Papers

Beyene NM, Steinfeld A, Pearlman J, Cooper RA, (2012) *Exploration of Health Perceptions and Assistive Technology Use by Driving Status as Related to Transportation Independence in New Delhi, India*, **Disability and Rehabilitation: Assistive Technology**, 7 (4). pp. 314-22.

Jefferds AN, Beyene NM, Upadhyay N, Shoker P, Pearlman JL, Cooper RA, Wee J (2010). *Current State of Mobility Technology Provision in Less-Resourced Countries*, **PM&R Clinics of North America**, pp. 221-242, Vol. 21, No. 1, February 2010.

Conference Presentations

Beyene, NM, Lane, AK, Steinfeld, A, Cooper, RM, *Modernizing Driver Evaluation to Encompass Intelligent Vehicle Technology*, **Intelligent Transportation Society of America Annual Meeting**, Pittsburgh, PA, May 31-June 3, 2015. [Presentation – Peer Reviewed Paper]

Beyene NM, *Visualizing Driver Capability Among Medically-Impaired Drivers*, **7th International Symposium on Visualization in Transportation**, Irvine, CA, October 23-25, 2013. [Presentation – Peer Reviewed Abstract]

Beyene NM, Lane AK, *Exploration of Driver Errors Involving Assistance During On-Road Driving Evaluations*, **37th ADED Conference**, Columbus, OH, August 16-20, 2013. [Poster – Peer Reviewed Abstract]

Beyene NM, Lane AK, Cooper RM, Cooper RA, *On-Road Evaluation of Driver Capability: A Medical Record Review of the Adaptive Driving Program*, **37th ADED Conference**, Columbus, OH, August 16-20, 2013. [Poster – Peer Reviewed Abstract]

Beyene NM, Lane AK, Cooper RM, Cooper RA, *On-Road Evaluation of Driver Capability: A Medical Record Review of the Adaptive Driving Program*, **Driving Assessment 2013**, Bolton Landing, NY, June 17-20, 2013. [Presentation – Peer Reviewed Paper]

Beyene NM, Lane AK, Cooper R, Suppe A, Steinfeld, A, Cooper RA, *Designing NAViSection: Linked technologies enhancing driver capability reports and informing naturalistic driving*, **Third International Symposium on Naturalistic Driving Research**, Blacksburg VA, August 27-30, 2012. [Poster – Peer Reviewed Abstract]

Beyene, NM, Lane, AK, Cooper, RM, *The Case for NAViSection: Analyzing errors, cues, and assistance during driving evaluation to determine driving capability*, **Aging, Mobility, and Quality of Life Conference**, Ann Arbor, MI, June 24-26, 2012. [Presentation – Peer Reviewed Abstract]

Beyene NM, Lane A, Seelman K, Songer T, Steinfeld A, Cooper RA, *Navisection: A Novel Method Joining Naturalistic Driving Data Collection with Expert Witness Event-logging for Enhanced Assessment of Driver Safety*, **3rd International Conference on Road Safety and Simulation**, Indianapolis IN, September 14-16, 2011. [Presentation – Peer Reviewed Paper]

Beyene, NM, Lane, AK, Cooper, RM, *The Experience Age: Medical Record Review of Outcomes from the Adaptive Driving Program*, **TRB ANB60 Fall Conference: Emerging Issues in Safe and Sustainable Mobility for Older Persons**, August 30-September 1, 2011. [Presentation – Peer Reviewed Abstract]

Beyene NM, Lane A, Cooper RA, *Perspectives on a Clinician's Interface to Manage Vehicle Technology for On-Road Evaluation*, **International Symposium on Quality of Life Technologies Conference**, Toronto, Canada, June 7, 2011. [Presentation – Peer Reviewed Paper]

Beyene NM, Cooper RA, Steinfeld A, *Social Exclusion Risk with Transportation Usage and Managing to Stop Driving*, **Rehabilitation Engineering and Assistive Technology Society of North America Conference**, Las Vegas, NV, June 26-30, 2010. [Poster – Peer Reviewed Paper]

Chung CS, Lin JT, Toro ML, Beyene N, Garcia Y, *Uniform Throwing Chair for Seated Throwing Sporting Events*, **Rehabilitation Engineering and Assistive Technology Society of North America Conference**, Las Vegas, NV, June 26-30, 2010. [Student Design Competition Finalist]
[Presentation – Judges Review of Paper]

Beyene NM, Suppe A, Steinfeld A, Lane AK (2009). *Clinical Use Trials of the CarChip: Training for Smooth Driving*, **International Symposium on Quality of Life Technology: Intelligent Systems for Better Living**, June 30-July 1, 2009. [Poster – Invited Presentation]

Beyene NM, Cooper RA, Steinfeld A, *Driving Status and the Inner Drive for Community Mobility: A Survey among People with Disabilities and Senior Citizens from Support Groups in New Delhi, India*, **Rehabilitation Engineering and Assistive Technology Society of North America Conference**, June 23-27, 2009. [Student Scientific Paper Award] [Presentation – Peer Reviewed Paper]

Jefferds A, Beyene NM, Upadhyay N, Shoker P, Pearlman J, Cooper RA, *User Satisfaction and Wheelchair Skills in India: A Pilot Study*, **Rehabilitation Engineering and Assistive Technology Society of North America Conference**, June 23-27, 2009. [Peer Reviewed Paper]

Beyene N, Jefferds A, Pearlman J, *International Training and Research on the Impact of Assistive Technologies for People with Disabilities in India*, **National Science Foundation Engineering Education Awardees Conference**, Reston, VA, February 1-3, 2009. [Poster – Project Final Report]

Beyene, Nahom, *The Art of Space Flight Exercise Hardware: Design and Implementation*, **Space 2004 Conference and Exhibit**, San Diego, California, September 28-30, 2004. [Presentation – Invited Paper]

Book Chapters

Laferrier JZ, Rice I, Beyene NM, Sprunger N, Simpson R, Fairman A, Collins D (2011). *Assistive Technology, Accessibility, and Universal Design*, In R. Cooper, P. Pasquina & R. Drach (Eds.), **Warrior Transition Leader Medical Rehabilitation Handbook** (pp. 119-157). Fort Detrick, MD: Borden Institute.

Other Publications

Beyene NM, Lane AK, *Survey of Driver Rehabilitation Specialists on Technology for On-Road Evaluation*, **ADED News Brake**, Winter 2011, Vol. 35, No. 1, pg. 18-19.

Beyene, Nahom, Draper, Christie, Lee, Chang, Pai, Janice, *Quadriceps Rehabilitation Device*, **Distinguished Lecture Series**, Stanford, CA, June 2, 2003. [Course Project Poster Show]

Guilliams, Mark, Beyene, Nahom, Rapley, Michael, *Resistive Exercise Description Document*, JSC 29558, **NASA-Johnson Space Center**, November 07, 2001.

Invited Presentations

Beyene, Nahom M., *Oh, Somebody Stepped out the Wrong Robo-Taxi this Morning! Autonomous Vehicles: What Could Possibly Go Wrong?* Digital Life Initiative @ Cornell Tech, March 13, 2020.

TIRES Transportation Forum, *Automated Mobility*, **Transportation Information Resources Education Services (TIRES)**, November 10, 2016.

Future of Mobility Forum, *Standards to Communicate the Revolution in Automobiles*, **Regional Transportation Alliance of Southwestern Pennsylvania (RTA of SWPA)**, July 11, 2016.

California Association for Driver Rehabilitation Specialists (ADED) Chapter Meeting, *NAVITY Technologies*, **Providence Little Company of Mary in San Pedro**, November 1, 2013.

State of the Science Symposium, *Adaptive Driving: Foundations & Frontiers*, **Walter Reed National Military Medical Center**, September 16, 2012.

GRECC Noon Conference, *Navisection: A Role for Technology to Enhance Driver Rehabilitation Services*, **Geriatric Research Education and Clinical Centers – VAPHS**, February 10, 2012.

State of the Science Symposium, *Did your car just talk? Cars as Robots for Driver Rehabilitation*, **National Intrepid Center of Excellence**, March 11, 2011.

State of the Science Symposium, *Appropriate Mobility and Transportation*, **Walter Reed National Military Medical Center**, September 25, 2009.

International Spine and Spinal Injuries Conference (ISICON), *Wheelchair Transportation Safety*, **Indian Spinal Injuries Centre**, February 22-24, 2008.

Professional Development Conference, *Defining Engineering Parameters for Space Resistive Exercise Development*, **National Society of Black Engineers Region 5 Alumni Extension**, November 20, 2004.

Funding Support:

2013-2014	Source: National Science Foundation (NSF) Program: Innovation Corps Teams (I-Corps) Award Number: 1345368 Sponsor: University of Pittsburgh
2009-2013	Source: National Science Foundation (NSF) Program: Quality of Life Technology Engineering Research Center (QoLT ERC) Award Number: 0540865 Sponsor: Carnegie Mellon University
2008	Source: National Science Foundation (NSF) Program: International Research Experiences in Engineering (IREE) Supplemental Grant Award Number: 0552351 Sponsor: University of Pittsburgh
2007-2009	Source: National Science Foundation (NSF) Program: Integrative Graduate Education and Research Traineeship (IGERT) Award Number: 0333420 Sponsor: Carnegie Mellon University
2002-2004	Program: Dean's Doctoral Diversity (3D) Assistantship Institution: Stanford University

Intellectual Property:

Invention Disclosure, "Highly adjustable chair for seated throwing athletics," November 4, 2010, Licensed to Accessible Designs Inc., October 18, 2012

Invention Disclosure, "Navisection: enhanced assessment of driving capability during on-road evaluations and training," Utility Patent Issued [9,623,865], April 18, 2017.

Awards and Recognition:

- 2017** Key Contributor Award, RAND Medal Awards
- 2016** TiE20 Winner, Award for Product Innovation, TiECon Midwest 2016 Ignite2Disrupt
- 2015** 1st Place, Cameron Rian Hays Outside the Box Competition, George Mason University
- 2014** Emerging Tech Finalist, Everyday Health Awards for Innovation, CES
- 2013** Accepted into Business Mentoring Roundtable by TiE Pittsburgh
Accepted into Inaugural Class of the Hustle Den by ThrillMill, Inc.
Six Minute Pitch Finalist, Transportation Innovation and Entrepreneur's Challenge
Pitt Randall Family Big Idea Competition – Wildcard Showcase
- 2012** Pitt Innovator Award
PhD Comics 2 Minute Thesis Contest! – Grand Prize Award
PhD TV Episode 1: Animated Video - <http://www.phdcomics.com/tv/#011>
Michael G Wells Student Healthcare Entrepreneurship Contest – Semifinalist
Fulbright-Fogarty Fellowship in Public Health – Recommended for Final Consideration
by National Screening Committee of the Institute of International Education (IIE)
NSBE Graduate Scholar
Pitt Randall Family Big Idea Competition – Semifinalist
- 2011** National Association of Minority Medical Educators Scholarship
- 2010** Thomas O'Conner PhD Student of the Year Award – SHRS-RST Department
RESNA Student Design Competition Finalist
NSBE Alumni Technical Excellence Award
- Since** RESNA Student Scientific Paper Award, 2009
- 2000** NASA – JSC Going the Extra Mile (GEM) Award, Fall 2003
University Honors – University of Texas at Austin, Fall 2000 & Spring 2001
NASA – JSC Flag Award, Fall 2001
NASA – JSC Co-op Award, Spring 2000

Media Coverage:

Bliss, Laura, "8 Bright Ideas for Driverless Cities," **CityLab**, <https://www.citylab.com/transportation/2017/05/8-bright-ideas-for-driverless-cities/526446/>, May 12, 2017.

Michelle Wright, "National Robotics Week celebrated with technology of future," **Channel 4 News Pittsburgh**, <http://www.wtae.com/news/local/allegheeny/National-Robotics-Week-celebrated-with-technology-of-future/-/10927008/19733846/-/xj35sz/-/index.html#ixzz2QUggdzrs>, Apr 12, 2013.

Kristin Sabol, "Nahom wins Grand Prize in PhD Comics Two Minute Thesis Competition," **Quality of Life Technology Center**, <http://www.cmu.edu/qolt/News/2012/beyene-wins-phd-comics-2-minute-thesis-contest.html>, October 5, 2012.

Chris Parr, "You have two minutes on your specialist subject, starting...now," **Times Higher Education**, www.timeshighereducation.co.uk/story.asp?storycode=421243, September 27, 2012.

Teaching and Mentoring:

Kinesiology and Biomechanics (REHSCI 1220), Spring 2013 – Undergraduate Course

Course Description: Introduction to kinesiology and biomechanics of the human body. The student will learn the functional anatomy and biomechanics of the major joints of the body and the application of kinesiology and biomechanics to describe and analyze normal and pathological human movement.

On-Demand Webinar, "Adaptive Driving: Foundations & Frontiers," RSTCE, Oct. 31, 2012. http://www.rstce.pitt.edu/RSTCE_Webinar/2012/RSTCEwebinarP24512.html,

Course Description: This presentation covers a broad range of issues related to driver capability assessment. In the first half, topics surrounding the foundations of driver rehabilitation will share how the media relates to policy trends on driver licensing. In addition, the fundamentals of driver rehabilitation include discussion of the societal demand for driver rehabilitation services and contemporary challenges to service provision. The latter half presents "frontiers" in driver rehabilitation by reviewing applications of technology from vehicle modifications and beyond. Based on a video segment reviewing the phases of driver rehabilitation, technology for the purpose of driving assessment will be demonstrated. The presenter describes a novel methodology called NAViSection with a brief overview of technologies in the realm of intelligent vehicles. In closing, future benefits of intelligent vehicles in driving assessment present an outlook for technology to harmonize the current demand for driver rehabilitation.

Introduction to Research Methodology (HRS2901), Fall 2010 – Graduate Course

Course Description: Designed to introduce research concepts to the all students in rehabilitation sciences. Content emphasis is placed on the basic concepts and terminology associated with research methodology. Through the readings and discussion it is hoped that the student will develop an idea of the role of research design

measurement and statistics in the research process and thus gain the ability to interpret and evaluate published research.

Technology and Innovation for People with Disabilities (TiPED) Program - NCIIA

Andrew Wolf, University of Pittsburgh, Summer 2012

Quality of Life Technology Research Experiences for Undergraduates (QoLT REU) - NSF

Whitney Wilson, University of Maryland College Park, Summer 2012

Daniel Christiana, Slippery Rock University, Summer 2012

Lauren Hatcher, Edinboro University, Summer 2010

Leadership and Service:

RAND Institutional Service

Staff Advisory Council on Diversity & Inclusion, 2020

Paper Reviewer

Assistive Technology, 2011 & 2012; Conference on Human Factors in Computing Systems (CHI), 2019; Traffic Injury & Prevention, 2012; Transportation Research Board (TRB), 2018; 3rd International Conference of Road Safety and Simulation, 2011

Space Challenges, Inc.

Board of Directors, 2014–2016

Minor Victories, LLC.

Board of Advisors, 2014–2016

Pan-African Graduate and Professional Student Union

Business Manager, 2012 – 2013

President, 2010 – 2011

Office Manager, 2011 – 2012

Business Manager, 2009 – 2010

Quality of Life Technology

(Student Leadership Council)

Industrial Liaison Chair, 2012 – 2013

Social Co-Chair, 2011 – 2012

Treasurer, 2010 – 2011

Communications Chair, 2009 – 2010

(Engineering Research Center)

Communications Committee, 2010

NSF Site Visit Planning Committee, 2009

Human Engineering Research Laboratories

PhD Representative, 2011

National Society of Black Engineers

<i>(Aerospace Systems Conference Planning Committee)</i> Operations Director, 2010	<i>(Pittsburgh Professionals Chapter)</i> Programs Chair, 2018-2019 President, 2019-2021
<i>(Space Special Interest Group)</i> Interim Director, 2007	<i>(Houston Space Chapter)</i> Programs Chair, 2005-2006

Ethiopian Students Association International

<i>(Leadership Team)</i> Head of Operational Guidelines and Procedures, 2003 – 2005 President, 2001 – 2003	<i>(Advisory Team)</i> Board of Advisors, 2005 to 2012
--	--

Affiliations and Membership:

Professional (Active)	National Society of Black Engineers (NSBE) [Lifetime Member #122] NSBE Special Interest Groups
Academic (Inactive)	Pan African Graduate and Professional Student Union (Pan-Af GPSU) LeaderShape TX – Graduate
Cultural (Inactive)	Ethiopian Students Association International (ESAi) – Advisor Ethiopian Community Organization in Houston (ECOH) – Secretary African Community Organization (ACO) Houston – Delegate Member