

Curriculum Vitae of Hugo Bruggeman, Ph.D.

I. PERSONAL INFORMATION

Dept. of Cognitive and Linguistic Sciences
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II. EDUCATION

- 2004** Doctor of Philosophy (Ph.D.) Dept. of Psychology, University of Minnesota, USA. Advisor & mentor: Dr. Herbert L. Pick Jr.
- 1996** Doctoraal (B.Sc.) Human Movement Sciences, Vrije Universiteit, Amsterdam, the Netherlands.

III. ACADEMIC POSITIONS

- 2009 -** Assistant Professor (Research), Dept. of Cognitive, Linguistic and Psychological Sciences, Brown University, USA.
- 2010** Visiting Scholar (Jan-March), Center for Neuroscience and Cognitive Systems, Italian Institute of Technology, Genova, Italy. Collaborator: Fulvio Domini.
- 2004 - 08** Post Doctoral Fellow, Perception Action Laboratory, Brown University, USA. Supervisor: Dr. William H. Warren, Jr.
- 2001 - 04** Research Assistant, Spatially Coordinated Behavior Laboratory, University of Minnesota, USA. Supervisor: Dr. Herbert L. Pick, Jr.
- 1999 - 02** Research Assistant, Human Sensorimotor Control Laboratory, University of Minnesota, USA. Supervisor: Dr. Jürgen Konczak.
- 1996 - 97** Visiting Scholar, Minnesota Laboratory for Low Vision Research, University of Minnesota, USA. Supervisor: Dr. Gordon E. Legge.

IV. OTHER PROFESSIONAL EXPERIENCE

- 2011 -** VA Medical Center, Providence. Co-investigator on the project: Functional assessment of ACL-deficient knees using virtual reality navigation.
- 1998 - 1999** User Centered Design Team, Web Development, University of Minnesota & IBM-Vancouver
Main projects: UMN homepage (*umn.edu*), UMN One Stop (*onestop.umn.edu*), and ISEEK (*iseek.org*); Tested website functionality; Conducted survey; Analyzed survey data; Developed and Built usability testing lab.

V. GRANTS & AWARDS

- Submitted** R21 (NIAMS): Role as Co-investigator; Title: *A Virtual Environment for the Assessment of Functional Mobility after Arthroscopy*.
- Submitted** DARPA: Role as Co-investigator; Title: *Deep Learning Architectures and Physics-Based Models of Steering Behaviors for Biologically-Driven Navigation*.
- In revision** R01 (NEI): Role as Principle Investigator; Title: *Perceptual Augmentation for Improved Low Vision Mobility*.
- 2008** *Center for Vision Research Award*: One academic-year fellowship in recognition of outstanding vision research program, Brown University, USA.
- 2002** *J.J. Jenkins Award*: Award for outstanding Center participation, Center for Cognitive Sciences, University of Minnesota, USA.
- 2001** *The Turtle Award*: Keynote speaker at the annual spring retreat of the Center for Cognitive Sciences, University of Minnesota, USA.
- 2000** *Eva O. Miller Fellowship*: One academic-year fellowship in recognition of an outstanding graduate student research program, Graduate School, University of Minnesota, USA.
- 1996** *VSB-beurs*: One year research scholarship to study abroad, VSB Foundation, the Netherlands.

VI. PUBLICATIONS, MANUSCRIPTS & PAPERS

a) Peer Reviewed Publications

- Bruggeman, H., Kliman-Silver, C., Domini, F. & Song, J.H. (in press). Dynamic manipulation integrates vision and touch during tool use. *Psychological Science*.
- Bruggeman, H. & Warren, W.H. (2010). The direction of walking – but not throwing or kicking – is adapted by optic flow. *Psychological Science*, 21(7), 1006-1013.
- Bruggeman, H., Pick Jr., H.L. & Rieser, J.J. (2009). Biomechanical Versus Inertial Information: Stable Individual Differences in Perception of Self-Rotation. *Journal of Experimental Psychology: Human Perception and Performance*, 35(5), 1472-1480.
- Bruggeman, H., Zosh, W.D. & Warren, W.H. (2007). Optic flow drives human visuo-locomotor adaptation. *Current Biology*, 17(23), 2035-2040.
- Bruggeman, H., Yonas, A. & Konczak, J. (2007). The processing of linear perspective and binocular information for action and perception. *Neuropsychologia*, 45(7), 1420-1426.
- Bruggeman, H., Pick Jr., H.L. & Rieser, J.J. (2005). Learning to throw on a rotating carousel: Recalibration based on limb dynamics and projectile kinematics. *Experimental Brain Research*, 163(2), 188-197.
- Bruggeman, H. & Legge, G.E. (2002). Psychophysics of reading XIX. Hypertext search and retrieval with low vision. *Proceedings of the IEEE*, 90, 94-103.

Bruggeman, H. & den Brinker, B.P.L.M. (1998). The effect of window width and window height on reading connected text with a CCTV magnifier. *Proceedings VISION'96, International Conference on Low Vision*, 1, 282-296.

den Brinker, B.P.L.M. & Bruggeman, H. (1996). Visual requirements for reading: The importance of a large field of view in reading with a magnifier. *Journal for Videology*, 1, 27-38.

b) Book Chapters

Bruggeman, H., & Warren, W.H. (2005). Integrating target interception and obstacle avoidance. In H.Heft & K.L. Marsh (Eds.), *Studies in Perception and Action VIII* (pp. 65-68). New Jersey: Lawrence Erlbaum

c) Submitted Manuscripts

Bruggeman, H., & Domini, F. (invited for resubmission). Pointing accuracy is mainly determined by visual on-line control, *PlosOne*.

Bruggeman, H., & Warren, W.H. (invited for resubmission). Behavioral dynamics of avoiding a moving obstacle, *Journal of Experimental Psychology: Human Perception and Performance*.

d) Manuscripts in Preparation

Fink, P., Bruggeman, H. & Warren, W.H. Optic flow and egocentric direction strategies for control of walking are linearly combined. To be submitted to *Journal of Vision*.

Bruggeman, H. & Warren, W.H. Variables of optic flow used to control walking. To be submitted to *Experimental Brain Research*.

Bruggeman, H., Fajen, B. R., & Warren, W.H. (in final preparation). Predicting locomotor paths through novel complex environments, *Journal of Vision*.

Bruggeman, H., & Warren, W.H. (in preparation). Optic flow calibrates the direction of thrust of a family of locomotion actions.

Bruggeman, H., & Warren, W.H. (in preparation). Effects of perceived distance, time-to-contact, and momentum on obstacle avoidance: The chainmail experiment.

e) Invited Presentations

Bruggeman, H. (2010, January 28). *Towards the identification of action systems*. Host: Mark Hollands, The School of Sport and Exercise Sciences, University of Birmingham, UK.

Rieser, JJ., Pick, HL., Bruggeman, H. & Riecke, B. (2008, 17-18 April) *Information to Perceive Locomotion in Physical and Virtual Environments*. Workshop cyberwalk, Max-Planck-Institut für biologische Kybernetik, Tübingen, Germany.

Bruggeman, H. (2008, April 10). *Optic flow: a step in the right direction*. Host: Zsuzsa Kaldy, Dept. of Psychology, UMass Boston, Massachusetts, USA.

Bruggeman, H. (2007, January 23). *Visual control of locomotion; learning to walk with a displacement in*

- optic flow*. Host: Karen Adolph, Dept. of Psychology, NYU, New York, USA.
- Bruggeman, H. (2005, July 9). *Learning to throw on a rotating carousel*. Talk at symposium: Perceptual learning and the control of action, ICPA, Monterey, California, USA.
- Bruggeman, H. (2005, 25 March). *Intercepting a moving target in the presence of an obstacle*. Host: Claire Michaels, Dept. of Psychology, University of Connecticut, USA.
- Bruggeman, H. (2003, 9 June). *Learning to throw on a rotating carousel; Towards a theory of Action Systems*. Host: Alan Wing, Sensory Motor Neuroscience, University of Birmingham, UK.
- Bruggeman, H. (2003, 3 June). *Throwing on a rotating carousel; Towards a theory of Action Systems*. Host: Harold Nefs, Dept. Physics of Man, Helmholtz Institute, Utrecht, the Netherlands.
- Bruggeman, H. (2003, 27 May). *Investigating hurling movements; Towards a theory of Action Systems*. Hosts: Eli Brenner & Jeroen Smeets, Dept. of Neuroscience, Rotterdam, the Netherlands.
- Bruggeman, H. (2001, 9 May). *Directional Recalibration in throwing*. Keynote speaker at the annual retreat of the Center for Cognitive Sciences, University of Minnesota, Minneapolis, Minnesota, USA.

f) Presentations at Meetings

- Drewniak-Watts, E.I., Bruggeman, H., Shalvoy, R.M., Warren, W., Aaron, R. K., H., D'Andrea, S. (2013, May 14-17). *Assessing Knee Function in ACL Deficient Patients Using a Virtual Environment*. GCMAS, Cincinnati, Ohio, USA
- Shalvoy, R.M., Bruggeman, H., D'Andrea, S., Warren, W., Aaron, R. K. (2013, January 26-29). *Virtual Environmental Navigation to Quantify Functional Disability in ACL-Deficient Knees*. ORS, San Antonio, Texas, USA.
- Kiefer, A, Bruggeman, H., Woods, R. & Warren, W.H. (2012, May 11 - 16). *Obstacle detection during walking by patients with tunnel vision*. VSS, Naples, Florida, USA.
- Bruggeman, H, Fantoni, C, Caudek, C, Domini, F, (2010, August 22-26). *Reaching movement accuracy is mainly determined by visual online control*. ECVP, Lausanne, Switzerland.
- Bruggeman, H., & Warren, W.H. (2010, May 7-12). *Are the optic flow and egocentric direction strategies for steering control during walking linearly combined?* VSS, Naples, Florida, USA.
- Bruggeman, H., & Warren, W.H. (2009, May 8-13). *Stepping in the right direction: control and adaptation of walking from optic flow*. VSS, Naples, USA.
- Bruggeman, H., & Warren, W.H. (2008, May 14-19). *Optic flow recalibrates the direction of walking but not throwing*. VSS, Naples, USA.
- Bruggeman, H., & Warren, W.H. (2007, November 15-18). *Effects of perceived distance, time-to-contact, and momentum on obstacle avoidance: The chainmail experiment*. Psychonomics, Long

Beach, California, USA.

- Warren, W.H., Bruggeman, H., & Zosh, W. (2007, May 11-16). *Optic flow serves as a teaching signal for visual-locomotor adaptation*. VSS, Sarasota, Florida, USA.
- Bruggeman, H., Rothman, D., & Warren, W.H. (2006, May 5-10). *Is obstacle avoidance controlled by perceived distance or time-to-contact?* VSS, Sarasota, Florida, USA.
- Cohen, J.A., Bruggeman, H., & Warren, W.H. (2006, May 5-10). *Combining moving targets and moving obstacles in a locomotion model*. VSS, Sarasota, Florida, USA.
- Bruggeman, H., & Warren, W.H. (2005, July 5-10). *Integrating target interception and obstacle avoidance*. ICPA, Monterey, California, USA.
- Cohen, J.A., Bruggeman, H., & Warren, W.H. (2005, May 6-11). *Switching behavior in moving obstacle avoidance*. VSS, Sarasota, Florida, USA.
- Bruggeman, H., & Warren, W.H. (2005, May 6-11). *Integrating target interception and obstacle avoidance*. VSS, Sarasota, Florida, USA.
- Bruggeman, H., Rieser, J.J., & Pick, H.L. Jr. (2004, 30 April-5 May). *An action system analysis of visuomotor learning*. VSS, Sarasota, Florida, USA.
- Bruggeman, H., Eid, C.E., Rieser, J.J., & Pick, H.L. Jr. (2003, 22-24 May). *Perturbing throwing movements; Multiple processes of adaptation*. EWOMS, Münster, Germany.
- Bruggeman, H., Eid, C.E., Rieser, J.J., & Pick, H.L. Jr. (2003, 9-14 May). *Alteration of the direction of throwing; Multiple processes of adaptation*. VSS, Sarasota, Florida, USA.
- Yonas, A., Bruggeman, H., & Konczak, J. (2002, 10-15 May). *The role of binocular information in the control of perception and action*. VSS, Sarasota, Florida, USA.
- Bruggeman, H., Pick, H.L. Jr., & Rieser, J.J. (2001, 24-29 June). *Directional recalibration in throwing*. ICPA, Storrs, Connecticut, USA.
- Bruggeman, H., Pick, H.L. Jr. Rieser, J.J., & Wagner, D.G. (2000, 16-19 November). *Directional recalibration in locomotion and throwing*. Psychonomics, New Orleans, Louisiana, USA.
- Bruggeman, H., Guidice, N., Stankiewicz, B.J., Legge, G.E. (2000, 30 April-May 5). *Distal target localization by the blind*. ARVO2000, Fort Lauderdale, Florida, USA.
- Bruggeman, H., & Legge, G.E. (1999, 12-16 July). *Searching hypertext with low vision*. VISION'99, International Conference on Low Vision, New York, New York, USA.
- Bruggeman, H., & Littman, B. (1998, 13-17 September). *Getting to know your users: The need for usability testing of web-based applications*. WebdevShare, Indiana University, Bloomington, Indiana, USA.
- Bruggeman, H., & Legge, G.E. (1997, 2-4 October). *Searching for information in hypertext with simulated low vision*. Minnesota Conference on Vision for Reach and Grasp. Minneapolis, Minnesota, USA.
- den Brinker, B.P.L.M., & Bruggeman, H. (1995, 15 September). *The effect of window height and*

window width on reading with a CCTV magnifier. Workshop Videology, Visio, Hilversum, the Netherlands.

den Brinker, B.P.L.M., & Bruggeman, H. (1994, 19-20 May). *Motor aspects of the use of reading aid by people with low vision.* NWO-conference, Maastricht, the Netherlands.

g) Presentations at Universities

Bruggeman, H. (2006, 4 December). *Motor Control and Psychology: Engaged NOT to be married?* Dept. of Cognitive & Linguistic Sciences, Brown University, Providence, RI, USA.

Bruggeman, H. (2004, 8 November). *Learning to throw on a rotating carousel.* Dept. of Cognitive & Linguistic Sciences, Brown University, Providence, RI, USA.

Bruggeman, H. (2004, 13 May). *Learning to throw on a rotating carousel.* Public presentation Ph.D. defense, Center for Cognitive Sciences, Minneapolis, USA.

Bruggeman, H. (2003, 11 June). *Learning to throw on a rotating carousel; Towards a theory of Action Systems.* Host: Harold Beekering, NICI, Nijmegen, the Netherlands.

Bruggeman, H. (2003, 10 June). *Throwing on a rotating carousel; Towards a theory of Action Systems.* Hosts: Geert Savelsberg & Rob Withagen, Free University, Amsterdam, the Netherlands.

Bruggeman, H. (2002, 24 October). *Why rotating people on a carousel makes my head spin!* Center for Cognitive Sciences, University of Minnesota, USA.

Bruggeman, H. (2001, 22 October). *Effect of mono- and binocular vision on pointing movements to a trapezoidal display: Evidence for an interaction of dorsal and ventral stream visual processing?* Vision Sciences, University of Minnesota, USA.

Bruggeman, H. (2001, 9 January). *Directional recalibration in throwing.* Hosts: Claire Michaels & Rob Withagen, Free University, Amsterdam, the Netherlands.

VII. TEACHING & MENTORING

a) Instructor

2011, 2012 Visualizing Vision—Research Methods, Dept. of Cognitive, Linguistic and Psychological Sciences, Brown University, USA.

2003 Introduction to Motor Learning and Control, School of Kinesiology, co-instructed with Paul Cassidy, University of Minnesota, USA.

b) Teaching Assistant

2001 Introduction to Research Methods and Statistics, Instructor: Bryan Dik, Dept. of Psychology, University of Minnesota, USA.

2000 Introduction to Cognitive Science, Instructor: Brian Sundermeier, Dept. of Psychology, University of Minnesota, USA.

2000 Introduction to Biomechanics, Instructor: Dr. Jürgen Konczak, School of Kinesiology, University of Minnesota, USA.

c) Guest Lectures

- 2010 Perception, Instructor: Dr. Joo-Hyun Song, Dept. of Cognitive, Linguistic and Psychological Sciences, Brown University, USA.
- 2007 Perception, Instructor: Dr. Fulvio Domini, Dept. of Cognitive and Linguistic Sciences, Brown University, USA.
- 2002 Perceptual Development, Instructor: Dr. Herbert L. Pick, Jr., Institute of Child Development, University of Minnesota, USA.
- 1998 Motor Control Learning and Development, Instructor: Dr. Peter Hancock, School of Kinesiology, University of Minnesota, USA.

d) Student Mentoring

- 2011 - Graduate Student: Huaiyong Zhao. On dissertation committee, for the project: *Information-based and model-based approaches to action control*. Dept. of Cognitive, Linguistic and Psychological Sciences, Brown University.
- 2010 - 11 Graduate Student: Zachary Page. First year project: *Speed control in pedestrian side-by-side walking*. Dept. of Cognitive, Linguistic and Psychological Sciences, Brown University.
- 2004 - 09 Graduate Student: Jon Cohen. Project: *Behavioral dynamics of avoiding a moving obstacle*. Dept. of Cognitive and Linguistics Sciences, Brown University.
- 2005 - 08 Graduate Student: Jeffrey J. Hutchison. Project: *Metabolic cost as a control parameter in the formation of locomotor behavior*. Dept. of Cognitive and Linguistics Sciences, Brown University.
- 2002 - 04 Undergraduate Student: Vadzim Piuneu. Project: *Circular treadmill stepping captures perception of self-locomotion*. Dept. of Psychology, University of Minnesota.
- 2002 - 03 Undergraduate Student: Christine Eid. Project: *Alteration of the direction of throwing*. Dept. of Psychology, University of Minnesota.
- 2002 - 03 Undergraduate Student: Charles Lambert. Project: *The preferred speed for stepping on a circular treadmill*. Dept. of Psychology, University of Minnesota.
- 2002 Undergraduate Student: Angela Pawlak. Project: *Distance perception in wheelchair locomotion*. Research Experience for Undergraduates in the Behavior and Cognitive Sciences, University of Minnesota.
- 2001 Undergraduate Student: Amy Diesch. Project: *Stability of the perceptual recalibration of turning*. Dept. of Psychology, University of Minnesota.

VIII. SERVICE**a) University Service**

- 2001 - 02 Elected Student Representative of the Governing Council of the Center for Cognitive Sciences, University of Minnesota, USA.
- 1998 - 02 Member and Chair, External Colloquium Committee, Center for Cognitive Sciences, Univer-

sity of Minnesota, USA.

- 2000** Member, Committee Welcome Weekend, Dept. of Psychology, University of Minnesota, USA.
- 1999** Member, Millennium Project, Center for Cognitive Sciences, University of Minnesota, USA.

b) Ad hoc reviewer

- 2012** Research Grant Council (RGC) of Hong Kong; Chapter of the forthcoming book “Human Walking in Virtual Environments: Perception, Technology, and Applications”; Journal of Experimental Psychology: Human Perception and Performance; PLoS ONE; International Journal of Advanced Robotics; Perceptual and Motor Skills
- 2011** Journal of Experimental Psychology: Human Perception and Performance
- 2010** Current Biology; Journal of Experimental Brain Research
- 2009** Journal of Vision; Perception; Journal of Experimental Psychology: Human Perception and Performance
- 2008** Journal of Experimental Psychology: Human Perception and Performance; Developmental Science; The Open Sports Sciences Journal
- 2007** National Science Foundation (NSF)
- 2006** Brain Research; Transactions on Applied Perception
- 2001** Proceedings of the IEEE

IX. MEMBERSHIPS

- 2003 -** Vision Sciences Society
- 1999 -** International Society for Ecological Psychology

X. OTHER AWARDS

a) Equipment Awards

- 2000, 2002** Minigrant from the Center for Cognitive Sciences, University of Minnesota, USA.

b) Travel Awards

- 2000, 2003** Award from the Center for Cognitive Science to present at: Psychonomics 2000, New Orleans, Louisiana; VSS 2003, Sarasota, Florida.
- 1999 - 2003** Gough Award from the Dept. of Psychology to present at: VISION 1999, New York, New York; ARVO 2000, Fort Lauderdale, Florida; ICPA 2001, Storrs, Connecticut; EWOMS 2003, Münster, Germany.