CURRICULUM VITAE

BIOGRAPHICAL

Name: *Cecile Siobhan Verbaarschot*
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EDUCATION and TRAINING

UNDERGRADUATE

Sep. 2007 – Aug. 2011	Radboud University Nijmegen, the Netherlands	Bachelor	Artificial Intelligence

GRADUATE

Sep. 2011 – Jan. 2014	Radboud University, Nijmegen, the Netherlands	Master	Cognitive Neuroscience
Sep. 2013 – Feb. 2014	InteraXon (now "Muse"), Toronto, Canada	Internship	Real-time emotion detection using EEG

POSTGRADUATE

Sep. 2014 – Jan. 2020	Radboud University, Nijmegen, the Netherlands	PhD	Title: The brain intending action: Linking neural preparation and subjective experience of motor intentions. Promotor: Prof. dr. Peter Desain. Co-Promotors: dr. Pim Haselager & dr. Jason Farquhar
Feb. 2015 – Jul. 2015	Donders Institute, Nijmegen, the Netherlands	MSc. course	Neuroimaging
Feb. 2015 – May 2015	Donders Institute, Nijmegen, the Netherlands	Graduate course	On papers and publishing
Jan. 2015 – Jul. 2015	Radboud University, Nijmegen, the Netherlands	Graduate course	Philosophy reading group on intended action
Jul. 2016	Redwood center for theoretical Neuroscience, Berkeley, USA	Summer school	Mining and modeling neuroscience data
Sep. 2016 – Jul. 2017	Radboud University, Nijmegen, the Netherlands	MSc. course	Statistical Machine Learning

Jan. 2018	Maastricht University, Maastricht, the Netherlands	Workshop	Hemodynamic Brain-Computer interfacing

ACADEMIC APPOINTMENTS and POSITIONS

2009-2012	Max Planck Institute for Psycholinguistics, Nijmegen, the Netherlands Employer: dr. Aoju Chen & Prof. dr. Antje Meyer	Student assistant
2012-2014	Donders Institute, Nijmegen, the Netherlands Employer: dr. Lea Hald & dr. Monique Flecken	Research assistant
2014-2020	Donders Institute, Nijmegen, the Netherlands Promotor: Prof. dr. Peter Desain. Co-promotors: dr. Pim Haselager & dr. Jason Farquhar	PhD candidate
2018-2019	Radboud University, Nijmegen, the Netherlands, department of Artificial Intelligence	Assistant teacher
2020-2020	Radboud University, Nijmegen, the Netherlands Supervisor: Prof. dr. Peter Desain	Postdoc
2020-2022	Maastricht University, Maastricht, the Netherlands; Rehab Neural Engineering Labs, University of Pittsburgh, Pittsburgh, USA Supervisor: dr. Bettina Sorger & dr. Robert Gaunt	Postdoc
2022-2025	Rehab Neural Engineering Labs, University of Pittsburgh, Pittsburgh, USA Supervisor: dr. Robert Gaunt	Postdoc
2025-present	Department of Neurological Surgery, University of Texas-Southwestern Medical Center, Dallas, Texas, USA Supervisor: Nader Pouration, M.D., PhD	Assistant Professor

HONORS

Beyond the Frontiers scholarschip of the honours academy of the Radboud University Nijmegen, the Netherlands	*2013-2014*
Student Award for attending the Berkeley course in mining and modeling of neuroscience data	*2016*
Student award for attending the 7th international BCI meeting in Asilomar	*2018*

Dutch StITPro Foundation grant for developing an educational BCI game	*2018-2019*
NWO Rubicon grant for two years of postdoc research at Pittsburg University	*2020-2022*
Trainee Professional Development Award of the Society for Neuroscience meeting	*2021*
Selected for Trainee Spotlight presentation of the BCI Society	*2022*
Student award for attending the 10th international BCI Meeting in Brussels	*2023*
Third place winner of The Annual Brain-Computer-Interface Award with the project "Multichannel biomimetic microstimulation of the human somatosensory cortex can create intuitive and reliable touch sensations for bionic hand control"	*2023*
First place winner of the Brain-Computer Interface Race at the Cybathlon competition as team manager of the PittCrew team.	*2024*

PUBLICATIONS

ORIGINAL PEER REVIEWED ARTICLES

1. **Verbaarschot, C.**, Farquhar, J., & Haselager, W.F.G. (2015). Lost in time...: The search for conscious intentions and Readiness Potentials. Consciousness and Cognition, 33, 300–315.
2. **Verbaarschot, C.**, Haselager, W.F.G., & Farquhar, J. (2016). Detecting traces of consciousness in the process of intending to act. Experimental Brain Research, 234(7), 1945-1956
3. **Verbaarschot, C.**, Haselager, P. & Farquhar, J. (2019). Probing for intentions: Why clocks do not provide the only measurement of time. Frontiers in Human Neuroscience, 13, 68.
4. **Verbaarschot, C.**, Farquhar, J., & Haselager, P. (2019). Free Wally: Where motor intentions meet reason and consequence. Neuropsychologia, 133, 107156.
5. **Verbaarschot, C.**, Tump, D., Lutu, A., Borhanazad, M., Thielen, J., van den Broek, P., ... & Desain, P. (2021). A visual brain-computer interface as communication aid for patients with amyotrophic lateral sclerosis. *Clinical Neurophysiology*, *132*(10), 2404-2415.
6. Shelchkova, N.D., Downey, J.E., Greenspon, C.M., Okorokova, E.V., Sobinov, A.R., **Verbaarschot, C.**, He, Q., Sponheim, C., Tortolani, A.F., Moore, D.D., Kaufman, M.T., Satzer, L.D., Gonzalez-Martinez, J., Warnke, P.C., Miller, L.E., Boninger, M.L., Gaunt, R.A., Collinger, J.L., Hatsopoulos, N.G., & Bensmaia, S.J. (2023). Microstimulation of human somatosensory cortex evokes task-dependent, spatially patterned responses in motor cortex. *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation, 16*(1), 182-183.
7. Greenspon, C.M., Valle, G., Shelchkova, N.D., Hobbs, T.G., **Verbaarschot, C.**, … , & Bensmaia, S. J. (2024). Evoking stable and precise tactile sensations via multi-electrode intracortical microstimulation of the somatosensory cortex. *Nature Biomedical Engineering*. DOI: doi.org/10.1038/s41551-024-01299-z.
8. Ikegaya, N., Mallela, A. N., Warnke, P. C., Kunigk, N. G., Liu, F., Schone, H. R., **Verbaarschot, C.**, ... & Gonzalez-Martinez, J. A. (2024). A novel robot-assisted method for implanting intracortical sensorimotor devices for brain-computer interface studies: principles, surgical techniques, and challenges. *Journal of Neurosurgery*, *1*(aop), 1-9.

9. Downey, J. E., Schone, H. R., Foldes, S. T., Greenspon, C., Liu, F., **Verbaarschot, C.**, ... & Collinger, J. L. (2024). A Roadmap for Implanting Electrode Arrays to Evoke Tactile Sensations Through Intracortical Stimulation. *Human Brain Mapping*, *45*(18), e70118.
10. Hobbs, T. G., Greenspon, C. M., **Verbaarschot, C.**, Valle, G., Hughes, C. L., Boninger, M. L., ... & Gaunt, R. A. (in press). Biomimetic stimulation patterns drive natural artificial touch percepts using intracortical microstimulation in humans. *Journal of Neural Engineering*.
11. **Verbaarschot, C.**, Karapetyan, V., Greenspon, C.M., Boninger, M., Sorger, B. & Gaunt, R.A. (2025). Conveying tactile object characteristics through customized intracortical microstimulation of the human somatosensory cortex. *Nature Communications, 16*, 4017.
12. **Verbaarschot, C.**, Farquhar, J. & Haselager, P. (under review). Tuning into the brain: readiness potentials as instigators of intention reports. *NeuroImage.*

OTHER PEER REVIEWED PUBLICATIONS

13. **Verbaarschot, C.**, & Haselager, W.F.G. (2018). Useful review marked by conceptual vagueness [Open Peer Commentary]. AJOB Neuroscience, 9, 47-48.
14. **Verbaarschot, C.S.**, Gerrits, A.B.W., Haselager, W.F.G., & Farquhar, J.D.R. (2019). Flip-that-Bucket: A fun EEG-BCI game on gooey movement intentions. Proceedings of the 8th Graz Brain-Computer Interface Conference 2019.
15. **Verbaarschot, C.**, Monscheuer, A., Dekleva, B., Collinger, J.L., Gaunt, R.A. (2023). The effect of artificially created sensory feedback on motor cortex activity during task performance. Proceedings of the 10th International Brain-Computer Interface Meeting 2023.

IN PREP.

16. **Verbaarschot, C.**, Boninger, M., Sorger, B., & Gaunt, R.A. (in prep.). Capturing the experience of (artificial) touch.
17. **Verbaarschot, C.**, Gaunt, R.A., Collinger, J.L. (in prep). 'Sensorimotor prostheses' in Krusienski, D.J. & Wolpaw, J.R. (Eds.) *Brain-Computer Interfaces: Principles and Practice.*
18. **Verbaarschot, C.**, De Miguel Gomez, A., Gerrits, A., Haselager, W.F.G., Farquhar, J.D.R., Gaunt, R.A., Maoz, U., Collinger, J.L. (in prep.). Can you beat your own brain? Exploiting the precedence of brain to muscle activity in a mind-blowing game that predicts a player's move before they have a chance to act.

ABSTRACTS (not published in Scientific Journals)

19. **Verbaarschot, C.**, Haselager, P., Farquhar, J. (2015). Detecting traces of consciousness in the process of intending to act. Poster presentation at ASSC 19 conference in Paris, France.
20. **Verbaarschot, C.**, Farquhar, J., & Haselager, P. (2018). Intentions and actions: when do brain and experience meet? Poster presentation at ASSC 22 in Krakow, Poland.
21. **Verbaarschot, C.**, Farquhar, J. & Haselager, P. (2018). Free Wally: a game for measuring meaningful motor intentions. Poster presentation at 7th International BCI Meeting in Asilomar, USA.
22. Gerrits, A., **Verbaarschot, C.**, Farquhar, J. (2018). Can we predict when you intend to move? An educational BCI game for a general public. Poster presentation at 7th International BCI Meeting in Asilomar, USA.
23. **Verbaarschot, C.**, Gerrits, A., Haselager, P., & Farquhar, J. (2019). Flip-that-bucket: a fun EEG-BCI game on gooey movement intentions. Poster presentation at 8th BCI conference in Graz, Austria.

24. **Verbaarschot, C.**, Karapetyan, V., Boninger, M, Sorger, B., & Gaunt, R. (2021). Create your own sensations: From custom built intracortical microstimulation to tactile feedback for prosthetic control. Poster presentation at the online Society for Neuroscience 2021 conference in Chicago, USA.
25. **Verbaarschot, C.**, Karapetyan, V., Greenspon, C.M., Boninger, M., Sorger, B., & Gaunt, R.A. (2022). Conveying object characteristics through customized intracortical microstimulation of the human somatosensory cortex. Gordon Research Conference on Neuroelectronic Interfaces in Ventura, USA.
26. **Verbaarschot, C.**, Boninger, M., Sorger, B., & Gaunt, R. (2022). Capturing the experience of (artificial) touch. Poster presentation at the 25th Association for the Scientific Study of Consciousness meeting in Amsterdam, the Netherlands.
27. **Verbaarschot, C.**, Karapetyan, V., Hughes, C.L., Greenspon, C.M., Bensmaia, S.J., & Gaunt, R.A. (2024). Intracortical microstimulation of the human somatosensory cortex can evoke a variety of long-term electrode-specific tactile qualities. Poster presentation at the Haptics Symposium in Long Beach, California.
28. **Verbaarschot, C.**, Monscheuer, A., Dekleva, B., Collinger, J.L., Gaunt, R.A. (2024). Manipulating task-relevant artificially evoked somatosensory feedback in a bidirectional brain-controlled guitar playing game. Poster presentation at the Neural Control of Movement (NCM) conference in Dubrovnik, Croatia.
29. **Verbaarschot, C.**, Monscheuer, A., Dekleva, B., Collinger, J.L., Gaunt, R.A. (2024). Manipulating task-relevant artificially evoked somatosensory feedback in a bidirectional brain-controlled guitar playing game. Poster presentation at the Brain Initiative conference in Rockville, MD.

PROFESSIONAL ACTIVITIES

UNDERGRADUATE STUDENT TEACHING

Sep. 2014 – Dec. 2014 Sep. 2015 – Dec. 2015 Sep. 2016 – Dec. 2016	Introduction Brain-Computer Interfacing (3rd year bachelor course in Artificial Intelligence at Radboud University Nijmegen). The course consists of 10 lectures and 12 practicals. I had the role of assistant teacher. I gave one lecture on the different neuroimaging methods that are relevant for brain-computer interfacing. Furthermore, I co-organized and taught the practicals during which students design, implement and test part of an existing BCI. The course included 50 to 70 students per year.
Jan. 2019 – Jul. 2019	Supervision of the bachelor thesis projects of 9 students in Artificial Intelligence at the Radboud University Nijmegen.
Dec. 2019 – Sep. 2020	Co-supervision of the bachelor thesis projects of 6 students in Artificial Intelligence. All supervision took place at the Radboud University Nijmegen.
May 2024 – Aug. 2024	Supervision of two students in Biomedical Engineering of their research projects over the summer.
Aug. 2024 – present	Co-supervision of one student in Biomedical Engineering during their work as a research assistant.

GRADUATE STUDENT TEACHING

Nov. 2014 – Jan. 2015 Nov. 2015 – Jan. 2016 Nov. 2016 – Jan. 2017 Nov. 2017 – Jan. 2018 Feb. 2019 – Jul. 2019	Advanced Brain-Computer Interfacing (1st year master course in Artificial Intelligence at Radboud University Nijmegen). The course consists of 6 lectures, 8 tutorial sessions and 13 practical sessions. During this course students learn to design, implement and test a BCI from scratch. The course included about 30 students per year. I had the role of assistant teacher and in

	2019, I organized and taught the course independently.
Jan. 2016 – Aug. 2016	Co-supervision of the master thesis projects of two students in Cognitive Neuroscience at the Donders Institute in Nijmegen.
Dec. 2019 – Sep. 2020	Co-supervision of the master thesis project of 1 student in Artificial intelligence. All supervision took place at the Radboud University Nijmegen.
Dec. 2021 – Dec. 2022	Co-supervision of two master thesis projects in Cognitive Neuroscience and Biomedical Engineering. All supervision took place at the Rehab and Neural Engineering labs of the University of Pittsburgh.

RESEARCH

LIST of RESEARCH INTERESTS

- Human cognition
- Brain-Computer Interfacing
- Neuro-prosthetics
- Motor rehabilitation
- Neurofeedback
- Consciousness
- Philosophy of mind
- Robotics

LOCAL PRESENTATIONS

- Oct. 2014, organized and hosted a workshop on BCI at the Donders Discussions (Nijmegen, the Netherlands).
- Apr. 2016, “Brain race”, a presentation and demonstration of BCI at the Donders open day (Nijmegen, the Netherlands).
- Feb. 2018, research pitch at the Radboud Talks competition in Nijmegen, the Netherlands.
- Jul. 2018, “Gamen tegen je brein” (Gaming against your brain), a public presentation and BCI demonstration at the Vierdaagse Feesten in Nijmegen, the Netherlands.
- Nov. 2018, “The hersenen als joystick” (the brain as joystick), an educational presentation to high school children at the Radboud University Nijmegen, the Netherlands.
- Nov. 2018, organization of a large scale public experiment at the InScience festival in Nijmegen, the Netherlands.

NATIONAL PRESENTATIONS

- Nov. 2015, “To do or not to do: the process of intending”, an Invited talk at workshop on free will and consciousness at VU Amsterdam, the Netherlands.
- Aug. 2017, organization of a large-scale public experiment at the Lowlands festival in Biddinghuizen, the Netherlands.

INTERNATIONAL PRESENTATIONS

- Apr. 2019, “Decoding motor intentions”, invited talk at COGS seminar in Sussex, England.

- Nov. 2022, “A participant-driven approach to designing artificial tactile sensations using intracortical microstimulation of the human somatosensory cortex”, mini-symposium talk at the Society for Neuroscience 2022 in San Diego, USA.
- Mar. 2023, “Context is key to evoking natural touch experiences using intracortical microstimulation of the human somatosensory cortex”, invited symposium talk at the Brain Stimulation conference in Lisbon, Portugal.
- Jun. 2023, “Conveying tactile object characteristics through intracortical microstimulation of the human somatosensory cortex”, invited talk at ZIPS-X of the Zuckerman Institute at Columbia University in New York, USA.
- Jun. 2023, “Designing naturalistic sensory feedback for closed-loop brain-computer interfaces”, workshop leader at the 10th International Brain-Computer Interface Meeting in Brussels, Belgium.
- Jun. 2023, “The effect of artificially created sensory feedback on motor cortex activity during task performance”, invited talk at the 10th International Brain-Computer Interface Meeting in Brussels, Belgium.
- Apr. 2025, “Bidirectional brain-computer interfaces for the restoration of sensation and movement in people with tetraplegia”, invited talk at the BCI and Neurotechnology Spring School in Vienna, Austria.
- Jun. 2025, “Stimulate the senses to increase performance: the importance of afference in restorative brain-computer interfacing” workshop leader at the 11th International Brain-Computer Interface Meeting in Banff, Alberta, Canada.

UNIVERSITY SERVICE

Sep. 2015 - Sep. 2017	Co-organizer of the Donders Foundations lecture series at the Donders Institute in Nijmegen, the Netherlands.
Sep. 2016 – Sep. 2018	BCI lab manager, Radboud University Nijmegen

NATIONAL SERVICE

Oct. 2018	Co-organizer of the Nijmegen Lectures, hosting Prof. dr. Daniel Dennett
Jul. 2023	Community outreach: Teaching a hands-on BCI session at the Camp-BioE summer course for children, University of Pittsburgh, USA.
Jun. 2022, Nov. 2023 & Jan. 2024	Community outreach: Python course for beginners. University of Pittsburgh, USA.
Apr. 2024	Community outreach: Organizing, designing and teaching an 8-week workshop series on neuroscience and biomedical engineering for kids in cooperation with RUACH Youth Bicycle Club, University of Pittsburgh, USA.

MEMBERSHIP in PROFESSIONAL and SCIENTIFIC SOCIETIES

Association for the Scientific Study of Consciousness (ASSC)	*2015-present*
Brain-Computer Interfacing Society	*2018-present*
Society for Neuroscience	*2021-present*
Society for the Neural Control of Movement	*2024-present*