

Suhas Vijayakumar

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Employment

Post-doctoral research fellow

April 2023 – present

Neurostimulation Group, JGU Medical Center

Mainz, Germany

As a postdoc in the Neurostimulation Group of Prof. Dr. Til Ole Bergmann, I use my background in physical sciences and neuroimaging to understand the effects of focused ultrasound stimulation in neurological disorders.

Post-doctoral research fellow

2019 – 2022

Department of Human Evolutionary Biology, Harvard University

Cambridge, MA, USA

At the Evolutionary Neuroscience Laboratory of Dr. Erin E. Hecht, I was involved in studying the neuroanatomical variation both within and across species, and its relation to the species' behavioral expertise. We were studying chimpanzees who use gestural communication and tools, humans who learnt to make stone tools, and silver foxes that were domesticated in the Russian farm-fox experiment. We used both *in vivo* and *ex vivo* MRI neuroimaging techniques to study the organization of the brain.

Education

PhD

2015 – 2019

Donders Institute, Radboud University

Nijmegen, The Netherlands

PhD thesis: Principles of Parietal-Frontal Cortical Organization

At the [Cognitive Neuroecology Lab](#) I studied the organization of the parietal-frontal networks in macaques and humans using resting state connectivity data under the supervision of Dr. Rogier B. Mars and Prof. Dr. Pieter Medendorp. We also tested a hypothesis based on evolution of the function of these networks, particularly in orienting and switching visual and auditory attention in humans, using structural and functional neuroimaging methods, and eye-tracking in the MR scanner.

MSc (research master's in Cognitive Neuroscience)

2013 – 2015

Radboud University

Nijmegen, The Netherlands

MSc thesis:

Learning to predict others' behavior: neural mechanisms of social-categorical knowledge acquisition and utilization.

BSc (in Physics, Mathematics, and Electronics)

2009 – 2012

St. Joseph's College of Arts and Science

Bengaluru, India

Publications

- Constructing others' beliefs from one's own using medial frontal cortex. Kolling N, Braunsdorf M, **Vijayakumar S**, Bekkering H, Toni I, & Mars RB. (2021) *Journal of Neuroscience*.
 - Neural mechanisms of predicting individual preferences based on group membership. **Vijayakumar S**, Hartstra E, Mars RB, & Bekkering H. (2020) *Social Cognitive and Affective Neuroscience*.
 - Longitudinal connections and the organization of the temporal cortex in macaques, great apes, and humans. Roumazeilles L, Eichert N, Bryant KL, Folloni D, Sallet J, **Vijayakumar S**, Foxley S, Tendler BC, Jbabdi S, Reveley C, Verhagen L, Dershowitz LB, Guthrie M, Flach E, Miller KL, & Mars RB (2020) *PLoS Biology*.
 - Mapping multiple principles of parietal-frontal cortical organization using functional connectivity. **Vijayakumar S**, Sallet J, Verhagen L, Folloni D, Medendorp WP, & Mars RB (2019). *Brain Structure and Function*.
 - Lateral frontal pole and relational processing: Activity patterns and connectivity profile. Hartogsveld B, Bramson B, **Vijayakumar S**, Van Campen AD, Marques JP, Roelofs K, Toni I, Bekkering H, & Mars RB (2018). *Behavioural Brain Research*.
 - Oops – That was a Mistake! How Toddler Brains React to Feedback. Meyer M, **Hassan Vijayakumar S**, Bekkering H, Janssen D, de Bruijn E & Hunnius S (2015). *Frontiers for Young Minds*.
 - Emotional responses to Hindustani Raga music: The role of musical structure. Mathur A, **Vijayakumar SH**, Chakrabarti B, & Singh NCP (2015). *Frontiers in Psychology*.
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Conferences and workshops

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| Focussed Ultrasound Neuromodulation Conference (FUN23) | <i>attendee – July 2023</i> |
| Fundamentals and Applications of TUS | <i>workshop – May 2023</i> |
| Brains and Behavior in the Wild
Organization and white matter connectivity of the cerebellum in Russian farm-foxes
Vijayakumar S, Rogers-Flattery C, Levine J, McEneaney J, Trut L, Kukekova A, Smaers J, Hecht EE. | <i>talk – Nov 2022</i> |
| SfN: Society for Neuroscience
Individual variation in the lateralization and exaptation of toolmaking neural circuitry for language use.
Vijayakumar S, Pezzulo S, Singh S, Conway CM, Pargeter J, Khreisheh N, Stout D, Hecht EE. | <i>poster – Nov 2022</i> |
| SfN: Society for Neuroscience
Individual variation in chimpanzee white matter connectivity, gray matter morphology, and behavior.
Vijayakumar S, Hopkins WD, Preuss TM, Hecht EE. | <i>poster – Nov 2021</i> |
| OHBM: Organization for Human Brain Mapping
Connectional topographies of human and macaque inferior parietal lobe.
Vijayakumar S, Freches GB, Sallet J, Klein-Flugge M, Jensen D, Medendorp WP, Mars RB. | <i>poster – Jun 2019</i> |
| ICON: International Conference for Cognitive Neuroscience
Complex organization of primate frontal-parietal cortex.
Vijayakumar S, Verhagen L, Sallet J, Folloni D, Medendorp WP, Mars RB. | <i>poster – Aug 2017</i> |

Teaching and supervision

Student supervision: 2020 – 2022

- Individual variation in the lateralization and exaptation of toolmaking neural circuitry for language use. 1 year, 2021 – 2022
- An investigation into the cellular connectivity of the canid prorean gyrus. 1 year, 2021 – 2022
- Lateralization of language and toolmaking ability. 6 months, 2021
- Parcellation of the fox cerebellum based on white matter connectivity. 6 months, 2020
- Cortico-cerebellar connectivity in domesticated foxes. 6 months, 2020

Teaching assistance in university courses: 2015 – 2018

- General introduction to Psychology A & B
- Brain and cognition I : introduction
- Research practicals I & II
- Academic and professional skills
- Academic writing and reviewing
- Advanced research methods

Guest lectures in university courses:

- Learning and Plasticity [[link to slides](#)]
- Notes and Tips from an early-stage researcher. [[link to slides](#)]
- How to give great presentations? [[link to slides](#)]

Memberships and honors

- Mentor for Action Potential Advising Program** 2021 – 2022
Remotely mentored and advised students (high school and bachelor's level) who were interested in the field of psychology and neuroscience. APAP is part of the mentorship initiative of the international, student-led organization – [Simply Neuroscience](#).
- Postdoc chair: Diversity, Inclusion, and Belonging committee** 2021 – 2022
Organized open houses, advocated for policy changes to graduate school admissions like removing GRE requirements, collaborated on a handbook of best practices for mentors.
- Co-founder of Open Science Nijmegen** 2018 – 2019
Co-founded the Nijmegen chapter of the international network of open science communities.
- Donders Sessions committee** 2017 – 2019
As a committee member, suggested, implemented, and organized new format ideas for Donders Sessions talks.
- Radboud talks 2019** Mar 2019
Received a personal science communication budget of 1000 euros for [winning](#) the university-wide Radboud talks competition [[link](#)].
- Erasmus+ Staff Training grant** Apr 2016
Travel grant to visit Oxford for two weeks to witness data collection, receive training in data analysis techniques, and develop better understanding of macaque neuroanatomy.
- Radboud Scholarship Programme** Sep 2013 – Sep 2015
Scholarship awarded to a selected few non-European students to pursue an English-taught Master's degree programme at Radboud University. In my case, for research master's in cognitive neuroscience.

Public outreach

Webinar: invited talk

Gave an online public talk titled "Human brains are special. Are they really?" at my alma mater - St. Joseph's College, Bengaluru, India. [link].

Jun 2020

Pint of Science: invited talk

Invited speaker at Pint of Science Maastricht, NL. Scientists across 24 countries share their discoveries and experiences with the public at local cafes for 3 days in May every year as part of Pint of Science.

May 2019

Pub talk: invited talk

Delivered an informal talk titled "What's special about the human brain?"

Feb 2019

Neuro Nuggets: YouTube

Started a YouTube series in which researchers talk about their beginnings in the field of neuroscience.

Nov 2017 (currently on hold)

Skills

Technical expertise

- Neuroimaging data acquisition: Siemens 3T (Prisma, PrismaFit, Skyra)
- Software tools: FSL, HCP WorkBench, MRICron, SPM
- Programming: Matlab, Bash, R, Presentation

Research experience (prior to PhD)

- **Student Assistant (Radboud University Nijmegen)** Mar 14 – Mar 15 | Nijmegen, The Netherlands
Advisor: Dr. Makiko Sadakata | Brain Computer Interface Laboratory
 - **Auditory Perceptual Learning with Neurofeedback**
Perceiving different notes of music is often an acquired skill with hours of training. This project was aimed to test the usage of a novel experimental paradigm with EEG and neuro-feedback, to assist participants in improving their auditory perceptual ability. I was involved mainly in EEG data collection where participants were tested on 4 days.
- **Research Assistant (National Brain Research Centre)** Aug 12 – Jun 13 | Manesar, India
Advisor: Dr. Nandini C. Singh | Speech and Language Processing Laboratory
 - **Music-Emotion Study: Web-based Survey**
Each raga in Hindustani Classical Music is said to be capable of inducing a unique set of emotions. I was involved in designing and developing an online study to test this claim. The main objective of conducting an online study was to collect and study the responses from people across various demographics to Hindustani music. This study being the first of its kind in India, included designing the required website, coding in HTML, PHP and MySQL, alongside managing the database of responses. It gave me invaluable insight into research data ethics and practices.
 - **Neural Correlates of Silent-Covert-Overt Reading Modes**
When adults read, it seems as though reading is an automated task. But little was known (at the time) about the key brain regions involved in reading across silent, covert and overt reading modes. The main focus of the study was to delineate these neural correlates in bilinguals. This was my first hands-on fMRI data analysis. During the course of this study, I learnt about study designs, fMRI, group-level analysis of BOLD data using SPM8.
- **Summer School (National Brain Research Centre)** Jun 12 – Aug 12 | Manesar, India
Advisor: Dr. Nandini C. Singh | Speech and Language Processing Laboratory
 - **Music-Emotion Study: Web-based Survey (Pilot)**
An online survey was designed to collect responses from participants after they heard a music excerpt. The survey-hosting site had to be flexible for multiple logins, store and retrieve participant data, present pseudo-randomised stimuli etc., for which Google sites seemed like a good starting point. Soon its coding, formatting and data management limitations became apparent and the website was redesigned to be hosted on the institute's servers. This internship served as my introduction to participant data management and research.