Curriculum Vitae (Updated: November 16, 2022)

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Nijmegen, NL

Skills

MATLAB | R | Python | C/C++ | Bio-signal Processing | Statistical Modeling | Regression | Machine Learning | Data Analysis & Visualization | Mixed Models | Multivariate Statistics | Neural Networks | Decision Trees | Git/Version Control | EEGLAB | Fieldtrip | ERPLAB | FSL | Academic Writing | Embedded Systems | Critical Thinking | Teamwork | Problem-Solving

Education

01.16 - 09.20 **PhD [Clinical Science & Biomedicine] - Aalborg University (AAU)** (DK)
Thesis: Effects of Chiropractic Spinal Manipulation on Brain Activity
Supervisors: Prof. Asbjørn M Drewes, Dr. Heidi Haavik, Dr. Imran K Niazi & Dr. Dina Lelic

09.12 - 02.15 **MS (with honors) [Biomedical Engineering] - National University of Sciences and Technology (NUST)** (PK)
Thesis: Individual Differences in Producing Movement Related Potentials & Online Multiclass Brain-Computer Interface for Detection and Classification of Movement-Related Cortical Potentials Associated with Task Force and Speed
Supervisors: Assoc. Prof. M Nabeel Anwar & Dr. Imran K Niazi

08.07 - 06.12 **BS [Computer Engineering] - National University of Computer and Emerging Sciences (NUCES-FAST)** (PK)

Academic track

since 09.21 **Donders Institute for Brain, Cognition and Behaviour** (NL)
Postdoc
Sleep and Memory group, lab of Assoc. Prof. Martin Dresler

since 10.20 **New Zealand College of Chiropractic** (NZ)
Postdoctoral Research Fellow
Centre for Chiropractic Research, lab of Dr. Heidi Haavik & Dr. Imran K Niazi

06.17 - 12.19 **New Zealand College of Chiropractic** (NZ)
Research Associate
Centre for Chiropractic Research, lab of Dr. Heidi Haavik & Dr. Imran K Niazi

11.14 - 11.14 **Koç University** (TK)
Guest Researcher
School of Medicine, lab of Prof. Kemal Türker

11.13 - 05.14 **Aalborg University** (DK)
Guest Researcher
Center for Sensory-Motor Interaction (SMI), lab of Prof. Kim Dremstrup

11.13 - 05.14 **Aalborg University Hospital** (DK)
Guest Researcher
Mech-Sense, lab of Prof. Asbjørn M Drewes

11.12 - 12.15 **National University of Sciences and Technology (NUST)** (PK)
Research Assistant
Department of Biomedical Engineering and Sciences, lab of Assoc. Prof. M Nabeel Anwar

Other positions

since 07.20 **Freelancer** (NL)

05.12 - 09.12 **Gaminations Inc.** (PK)
Software Engineer

02.12 - 04.12 **Inno8Tech** (PK)
Junior Software Engineer

Funding

2018	**Travel grant** (DK) The Lundbeck Foundation	DKK 11,367
2018	**Travel grant** (DK) The Oticon Foundation	DKK 5,500
2014	**Research travel scholarship** (NZ) New Zealand College of Chiropractic *Sensorimotor effects of spinal manipulation at Koç University (TK)*	NZ$ 3,500
2013	**Research scholarship** (NZ) New Zealand College of Chiropractic *Online BCI for movement detection and classification at Aalborg University (DK)*	NZ$ 3,000

Awards and honors

2020	**Excellence award** from New Zealand College of Chiropractic
2020	**Top 100 in Neuroscience in 2019 in *Scientific Reports*** (*The effects of chiropractic spinal manipulation on central processing of tonic pain - a pilot study using standardized low-resolution brain electromagnetic tomography (sLORETA)*)
2015	**Gold medal** from National University of Sciences and Technology (PK) for achieving 1st position in Biomedical Engineering graduate batch 2012

Participation in joint projects

since 2020 — **EEGManyPipelines**
Steering Committee Member
www.eegmanypipelines.org

List of Publications

(also available at: msnavid.com/publications)

Citation report (Web of Science)

Publications	21
h-index	8
Verified peer reviews	5

† Equal contribution
# Corresponding author

Journal articles (peer reviewed)

[BCI, & LFP papers (with/without neurostimulation)]

[Neurostimulation papers]

[EEG papers]

1. Niazi, I. K., **Navid, M. S.**†, Rashid, U.†, Amjad, I., Haavik, H., Alder, G., Olsen, S., Kumari, N., Signal, N., Taylor, D., Farina, D., & Jochumsen, M. (2022). "Associative cued asynchronous BCI induces cortical plasticity in stroke patients". *Annals of Clinical and Translational Neurology, 9(5)*, 722-733.
2. Niazi, I. K.†, **Navid, M. S.**†, Bartley, J., Shepherd D., Perdesen, M., Burns, G., Taylor, D., & White, D. E. (2022). "EEG signatures change during unilateral Yogi nasal breathing". *Scientific Reports, 12*(1), 520.
3. **Navid, M. S.**, Kammermeier, S., Niazi, I. K., Sharma, V. D., Vuong, S. M., Bötzel, K., Greenlee, J. D. W., & Singh, A. (2022). "Cognitive task-related oscillations in human internal globus pallidus and subthalamic nucleus". *Behavioural Brain Research, 424*, 113787.
4. **Navid, M. S.**, Niazi, I. K., Lelic, D., Amjad, I., Kumari, N., Shafique, M., Holt. K., Rashid, U., Drewes, A. M., & Haavik, H. (2022). "Chiropractic spinal adjustment increases the cortical drive to the lower limb muscle in chronic stroke patients". *Frontiers in Neurology, 12*, 2663.
5. Hadi, Z., Umbreen, A., Anwar, M. N., & **Navid, M. S.**# (2021). "The Effects of Unilateral Transcranial Direct Current Stimulation on Unimanual Laparoscopic Peg-Transfer Task". *Brain Research 1771*, 147656.
6. Holt, K., Niazi, I. K., Amjad, I., Kumari, N., Rashid, U., Duehr, J., **Navid, M. S.**, Shafique, M., & Haavik, H. (2021). "The Effects of 4 Weeks of Chiropractic Spinal Adjustments on Motor Function in People with Stroke: A Randomized Controlled Trial". *Brain Sciences, 11*(6).
7. Steven Waterstone, T., Niazi, I. K., **Navid, M. S.**, Amjad, I., Shafique, M., Holt, K., Haavik, H., & Samani, A. (2020). "Functional Connectivity Analysis on Resting-State Electroencephalography Signals Following Chiropractic Spinal Manipulation in Stroke Patients". *Brain Sciences, 10*(9).
8. **Navid, M. S.**, Niazi, I. K., Lelic, D., Nedergaard, R. B., Holt, K., Amjad, I., Drewes, A. M., & Haavik, H. (2020). "Investigating the Effects of Chiropractic Spinal Manipulation on EEG in Stroke Patients". *Brain Sciences, 10*(5).

9. Jochumsen, M., **Navid, M. S.**, Rashid, U., Haavik, H., & Niazi, I. K. (2019). "EMG- Versus EEG-Triggered Electrical Stimulation for Inducing Corticospinal Plasticity". *IEEE Transactions on Neural Systems and Rehabilitation Engineering, 27*(9), 1901–1908.
10. **Navid, M. S.**, Lelic, D., Niazi, I. K., Holt, K., Mark, E. B., Drewes, A. M., & Haavik, H. (2019). "The effects of chiropractic spinal manipulation on central processing of tonic pain - a pilot study using standardized low-resolution brain electromagnetic tomography (sLORETA)". *Scientific Reports, 9*(1), 6925.
11. **Navid, M. S.**, Niazi, I. K., Lelic, D., Drewes, A. M., & Haavik, H. (2019). "The Effects of Filter's Class, Cutoff Frequencies, and Independent Component Analysis on the Amplitude of Somatosensory Evoked Potentials Recorded from Healthy Volunteers". *Sensors, 19*(11).
12. Jochumsen, M., **Navid, M. S.**, Nedergaard, R. W., Signal, N., Rashid, U., Hassan, A., Haavik, H., Taylor, D., & Niazi, I. K. (2019). "Self-Paced Online vs. Cue-Based Offline Brain–Computer Interfaces for Inducing Neural Plasticity". *Brain Sciences, 9*(6).
13. Jochumsen, M., Cremoux, S., Robinault, L., Lauber, J., Arceo, J. C., **Navid, M. S.**, Nedergaard, R. W., Rashid, U., Haavik, H., & Niazi, I. K. (2018). "Investigation of Optimal Afferent Feedback Modality for Inducing Neural Plasticity with A Self-Paced Brain-Computer Interface". *Sensors, 18*(11).
14. Haavik, H., Niazi, I. K., Jochumsen, M., Uginčius, P., Sebik, O., Yılmaz, G., **Navid, M. S.**, Özyurt, M. G., & Türker, K. S. (2018). "Chiropractic spinal manipulation alters TMS induced I-wave excitability and shortens the cortical silent period". *Journal of Electromyography and Kinesiology, 42*, 24–35.
15. Jochumsen, M., Niazi, I. K., Nedergaard, R. W., **Navid, M. S.**, & Dremstrup, K. (2018). "Effect of subject training on a movement-related cortical potential-based brain-computer interface". *Biomedical Signal Processing and Control, 41*, 63–68.
16. Shakeel, A., **Navid, M. S.**, Anwar, M. N., Mazhar, S., Jochumsen, M., & Niazi, I. K. (2015). "A Review of Techniques for Detection of Movement Intention Using Movement-Related Cortical Potentials". *Computational and Mathematical Methods in Medicine, 2015*, 346217.
17. Jochumsen, M., Niazi, I. K., **Navid, M. S.**, Anwar, M. N., Farina, D., & Dremstrup, K. (2015). "Online multi-class brain-computer interface for detection and classification of lower limb movement intentions and kinetics for stroke rehabilitation". *Brain-Computer Interfaces, 2*(4), 202–210.
18. Anwar, M. N., **Navid, M. S.**, Khan, M., & Kitajo, K. (2015). "A possible correlation between performance IQ, visuomotor adaptation ability and mu suppression". *Brain Research, 1603*, 84–93.

Conference presentations

1. **Navid, M. S.**, Niazi, I. K., Lelic, D., Kumari, N., Shafique, M., Holt, K., Amjad, I., Rashid, U., Drewes, A. M., & Haavik, H. (2021, September). "Chiropractic spinal manipulation increases the corticomotor excitability of lower limb muscle in people with chronic stroke." Poster presented at the 16th biennial World Federation of Chiropractic (WFC) Conference, Virtual Program. (**Awarded Best Poster by Region**)
2. Haavik, H., Holt, K., Merkle, C., Kumari, N., Amjad, I., **Navid, M. S.**, & Niazi, I. K. (2021, March). "Directing specific adjustive thrust towards a chiropractic subluxation significantly alters sensorimotor integration compared to directing the thrust at a non-subluxated vertebrae". Poster at the *16th biennial World Federation of Chiropractic (WFC) Conference*, Virtual Program.
3. Haavik, H., Holt, K., Merkle, C., Kumari, N., Amjad, I., **Navid, M. S.**, & Niazi, I. K. (2021, March). "Directing the specific adjustive thrust toward a chiropractic subluxation significantly alters sensorimotor integration compared to directing the thrust at a normally functioning vertebrae". Talk at the *27th Association of Chiropractic Colleges Research Agenda Conference (ACC-RAC)*, Virtual Program.
4. Holt, K., Niazi, I. K., Amjad, I., **Navid, M. S.**, Shafique, M., Duehr, J., & Haavik, H. (2020, July). "Pragmatic trial investigating effects of 4 weeks of spinal manipulation plus physical therapy Vs physical therapy on motor function in stroke patients". Poster presented at the *XXIII International Society of Electrophysiological Kinesiology (ISEK) Congress*, Virtual Program.
5. Niazi, I. K., Jensen, S. H. B., Jørgensen, C. K., Nielsen, C. W., **Navid, M. S.**, Holt, K., & Haavik, H. (2020, May). "Using Artificial intelligence (AI) to investigate the effects of Chiropractic Spinal Manipulation on Resting state EEG in Stroke Patients". Talk at the *European Chiropractors' Union (ECU) Convention*, Cancelled.
6. **Navid, M. S.**, Niazi, I. K., Holt, K., Amjad, I., Shafique, M., Drewes, A. M., & Haavik, H. (2020, May). "Effects of a single session of chiropractic spinal manipulation on the brain activity of stroke patients using somatosensory evoked potentials". Poster presented at the *European Chiropractors' Union (ECU) Convention*, Cancelled.

7. **Navid, M. S.**, Niazi, I. K., Lelic, D., Oliveira, A. de S. C., Drewes, A. M., & Haavik, H. (2019, March). "Investigation of changes in the spatial and temporal brain activity with spinal manipulation – a somatosensory evoked potentials based study". Poster presented at the *15th biennial World Federation of Chiropractic (WFC) Conference*, Berlin, Germany.
8. **Navid, M. S.**, Niazi, I. K., Lelic, D., Amjad, I., Shafique, M., Drewes, A. M., & Haavik, H. (2019, March). "Effects of a single session of chiropractic spinal manipulation on the brain activity of stroke patients using somatosensory evoked potentials". Poster presented at the *15th biennial World Federation of Chiropractic (WFC) Conference*, Berlin, Germany.
9. **Navid, M. S.**, Niazi, I. K., Lelic, D., Drewes, A. M., & Haavik, H. (2018, November). "Effect of filter's cutoff frequencies and ICA on the amplitudes of somatosensory evoked potentials". Poster presented at the *48th Annual Meeting of the Society for Neuroscience (SfN)*, San Diego, USA.
10. Niazi, I. K., El-Omar, B., Dhillon, N. S., **Navid, M. S.**, Nedergaard, R. W., Jochumsen, M., & Haavik, H. (2018, July). "Effect of different pre-processing methods on somatosensory evoked potentials". Poster presented at the *XXII International Society of Electrophysiology and Kinesiology (ISEK) Congress*, Dublin, Ireland.
11. **Navid, M. S.**, Lelic, D., Niazi, I. K., Holt, K., Mark, E. B., Drewes, A. M., & Haavik, H. (2017, March). "Dishabituation of the central nervous system to tonic pain following chiropractic care - a standardized low-resolution brain electromagnetic tomography (sLORETA) based study". Poster presented at the *14th biennial World Federation of Chiropractic (WFC) Conference*, Washington, USA.
12. Shakeel, A., Ahmad, H., **Navid, M. S.**, Mahroo, A., & Anwar, M. N. (2017, February). "Performance feedback assists practice driven plasticity". Poster presented at the *13th IASTED International Conference on Biomedical Engineering (BioMed)*, Innsbruck, Austria.
13. Abid, F., Hassan, A., Abid, A., Jochumsen, M., **Navid, M. S.**, Nedergaard, R. W., & Niazi, I. K. (2016, December). "Transfer learning for electroencephalogram signals". Poster presented at the *9th International Conference on Computer and Electrical Engineering (ICCEE)*, Barcelona, Spain.
14. **Navid, M. S.**, Lelic, D., Niazi, I. K., Holt, K., Mark, E. B., Drewes, A. M., & Haavik, H. (2016, October). "Dishabituation of central nervous system to tonic pain following chiropractic care - a standardized low resolution brain electromagnetic tomography (sLORETA) based study". Poster presented at the *19th biennial International Pharmaco-EEG Society (IPEG) Meeting*, Nijmegen, The Netherlands.
15. Gilani, S. O., Jamil, M., Fazal, Z., **Navid, M. S.**, & Sakina, R. (2016, August). "Automated Scene Analysis by Image Feature Extraction". Poster presented at the *2016 IEEE 14th Intl Conf on Dependable, Autonomic and Secure Computing, 14th Intl Conf on Pervasive Intelligence and Computing, 2nd Intl Conf on Big Data Intelligence and Computing and Cyber Science and Technology Congress(DASC/PiCom/DataCom/CyberSciTech)*, Auckland, New Zealand.
16. Haavik, H., Niazi, I. K., Duehr, J., Kinget, M., Uginčius, P., Sebik, O., Yılmaz, G., **Navid, M. S.**, & Türker, K. S. (2016, June). "Chiropractic alters TMS induced I-wave excitability and cortical silent period duration". Poster presented at the 10th biennial International Motoneuron Meeting, Istanbul, Turkey.
17. Akmal, M., Jochumsen, M., **Navid, M. S.**, Shafique, M., Zaidi, S. M. T., Taylor, D., & Niazi, I. K. (2015, May). "Universal matched-filter template versus individualized template for single trial detection of movement intentions of different tasks". Poster presented at the *25th Italian Workshop on Neural Networks (WIRN)*, Vietri sul Mare, Italy.
18. Jochumsen, M., **Navid, M. S.**, Nedergaard, R. W., Anwar, M. N., Niazi, I. K., & Dremstrup, K. (2014, September). "Online detection and classification of movement kinetics". Poster presented at the *6th International Brain-Computer Interface Conference*, Graz, Austria.

Manuscripts under review

1. Niazi, I. K.†, **Navid, M. S.**†, Merkle, C., Amjad, I., Kumari, N., Holt, K., & Haavik, H. "Comparison of specific and non-specific single chiropractic adjustment on sensorimotor integration in people with sub-clinical neck pain". *Scientific Reports*.

Teaching Experience

Radboud University (NL)	in 10.22	**Course "Medical Neuroscience - Functional Imaging"** Lecturer (3 lectures (120 min each) + 2 practical (120 min each)) for Assist. Prof. Nils Kohn, graduate level *Topics:* Overview of electrophysiological techniques in neuroscience, their applications and usage
	04.22 - 06.22	**Course "Data Analysis"** Workgroup teacher (2 groups, 8 sessions/group, 105 min each) for Dr. Inge Rabeling-Keus, undergraduate level *Topics:* Implementation of statistical methods and techniques in SPSS and R
	02.22	**Course "Neuroscience of Sleep"** Project mentor (1 group) for Assoc. Prof. Martin Dresler, graduate level
	11.21 - 01.22	**Course "Brain & Cognition 1"** Workgroup teacher (2 groups, 7 sessions/group, 105 min each) for Assoc. Prof. Eric Maris, undergraduate level *Topics:* Neural Transmission, Neurotransmitters, Receptive Fields, Motor System, Functional Neuroanatomy, Disorders of the Brain
NUST (PK)	09.14 - 02.15	**Course "Neural Engineering"** Tutor for Assoc. Prof. M Nabeel Anwar, graduate level *Topics:* BCIs, EEG data acquisition and analysis
NUCES-FAST (PK)	01.12 - 05.12	**Course "Embedded Systems"** Tutor for Khurram Siddiqi, undergraduate level *Topics:* Microcontroller programming & circuit designing

Supervision

Thesis supervision	since 09.22	**4 students**, Bachelor's thesis at *Radboud University (NL)*
	since 04.22	**Maryam Javed**, Master's thesis at *National University of Sciences and Technology (NUST) (PK)*
	since 04.22	**Ahmad Maaz Ali**, Master's thesis at *National University of Sciences and Technology (NUST) (PK)*
	09.16 - 06.18	**Izzat Fatima**, Master's thesis at *National University of Sciences and Technology (NUST) (PK)*
	09.16 - 06.18	**Aysha Umbreen**, Master's thesis at *National University of Sciences and Technology (NUST) (PK)*
Research assistants & interns	since 01.22	**Juan Bernabe Nakagawa**, graduate research intern - *Donders Institute (NL)*
	09.17 - 01.18	**Barak El-Omar**, Lab rotation - *Aalborg University (DK)*
	09.17 - 01.18	**Navinder Singh Dhillon**, Lab rotation - *Aalborg University (DK)*

Training/Courses

2022	**Education in a Nutshell**, Radboud University (NL)
2022	**Programming in (Neurobs) Presentation**, Radboud University (NL)
2019	**Practical Mixed Effect Regression Modeling for Psychology and Language Science**, Radboud University (NL)
2018	**Method Comparison, Reliability and Agreement**, Aalborg University (DK)
2018	**Mixed Models with Biomedical and Engineering Applications**, Aalborg University (DK)
2018	**Multivariate Data Analysis**, Aalborg University (DK)
2018	**Analyzing Neural Time Series Data**, Radboud University (NL)
2018	**Data Science using R**, Aalborg University (DK)
2018	**MEG/EEG Tool-kit 2018 – Advanced data analysis and source modeling of EEG and MEG data**, Donders Centre for Cognitive Neuroimaging (NL)

2016 **Non-invasive Techniques for the Assessment of Plasticity in the Human Nervous System**, Aalborg University (DK)
2016 **Laboratory Animal Science *(FELASA B)***, Aarhus University (DK)
2016 **Scientific Computing Using Python: Python + Scientific Computing**, Aalborg University (DK)
2016 **Scientific Computing Using Python: High Performance Computing in Python**, Aalborg University (DK)
2016 **Writing and Reviewing Scientific Papers**, Aalborg University (DK)
2016 **Biostatistics**, Aalborg University (DK)