

CURRICULUM VITAE



PERSONAL INFORMATION

Name	Dr. Fabrizio Leo
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GitHub	https://github.com/leofabrizio
Nationality	Italian
Date of birth	14 02 1978
Place of birth	Livorno (Italy)

WORK EXPERIENCE

I have been currently working on haptics research. In particular, I investigate how humans interact and touch solid objects depending on their spatial skills and interaction context (i.e., when alone or in a social situation). To investigate these topics, I use a prototype developed in IIT which is a small sensorized and instrumented cube (iCube; see also [Sciutti et al. 2019](#)) that allows to measure contact on its faces and the way it is moved in space. For this project, I co-designed experiments involving human participants and I developed a Python pipeline to extract the features of interest from the cube (e.g. number of touched sensors and their change in time, device rotation in space during the task, touch frequency, rotation velocity and so on). Subsequently, I analyzed the dataset using a combination of inferential statistics and machine learning.

01/05/2020 – now – Istituto Italiano di Tecnologia – Department of Robotics, Brain and Cognitive Sciences
External collaborator – supervisor: Dr. Alessandra Sciutti

01/04/2014 – 31/03/2020 – Istituto Italiano di Tecnologia – Department of Robotics, Brain and Cognitive Sciences
Postdoc – supervisor: Dr. Luca Brayda

01/09/2012 – 15/03/2014 – Otto von Guericke Universität Magdeburg – Institute for Biological Psychology
Postdoc – supervisor: Prof. Toemme Noesselt

14/06/2010 – 31/08/2012 – Max Planck Institute (MPI) for Biological Cybernetics – Cognitive Neuroimaging Group
Postdoc – supervisor: Dr. Uta Noppeney

01/04/2009 – 31/05/2010 – University College London (UCL) – Institute of Cognitive Neuroscience (ICN)
Honorary Research Associate – supervisor: Prof. Jon Driver

17/10/2008 – 16/10/2009 – Università di Bologna – Polo scientifico didattico di Cesena - Research Grant

01/06/2007 – 31/05/2008 – Università di Bologna - Research Grant

01/02/2006 – 31/01/2007 – Università di Bologna - Research Grant

TEACHING EXPERIENCE

10-2021 - Università di Genova – Corso di Laurea in Ingegneria Biomedica – Bachelor thesis co-supervisor of Andrea Giuseppe Pietro Manera and Lorenzo Benedetti

2018/2021 – Università di Genova – PhD Program in Bioengineering and Robotics – Department of Informatics, Bioengineering, Robotics, System Engineering DIBRIS - PhD thesis co-tutor of Sara Nataletti

2015/2016 – Università di Torino – Dipartimento di Psicologia - Master thesis co-supervisor of Caterina Baccelliere

07-2008 – Università di Bologna – Corso di Laurea in Scienze del comportamento e delle Relazioni Sociali - Facoltà di Psicologia - Bachelor thesis co-supervisor of Noemi Mazzoni

2006/2007 – Università di Bologna – Tutor and support of teaching activities

EDUCATION

01/2022 – in progress – Università degli Studi di Padova - 2nd level Master in “Machine Learning and Big Data for precision medicine and biomedical research”

03/2020 – 06/2020 - IBM Data Science by IBM on Coursera. Certificate earned at 06/06/2020

01/2006 – 04/2009 - Università degli Studi di Bologna – PhD in ‘General and clinical psychology’ – supervisor: Prof. Elisabetta Ládavas. Final grade: Excellent

03/2004 – 03/2005 - Università degli Studi di Firenze – ASL Livorno - Training as a graduate psychologist

09/2003 – 09/2004 - Università degli Studi di Firenze – Course on “Evaluation and development of human resources”

07/2003 - Università degli Studi di Firenze - Degree in Experimental Psychology – Graduate thesis: “Effect of two different mechanisms in visual perception of movement of ambiguous stimuli” – supervisor: Prof. David Burr. Final grade: 110/110 cum laude

OTHER KNOWLEDGE

- SCIENTIFIC WRITING
- PROFESSIONAL PHOTOGRAPHER *

* Certificates and portfolio available upon request

MOTHER TONGUE

ITALIAN

OTHER LANGUAGES

English

- Reading Excellent
- Writing Excellent
- Speaking Very good

French

- Reading good
- Writing elementar
- Speaking elementar

German

- Reading elementar
- Writing elementar
- Speaking elementar

Computer and other technical skills

- **Programming languages:** Matlab, Python, R
- **Statistical knowledge:** excellent skills in applying statistical models to extract knowledge from data using Python and R
- **Data Science:** IBM Data Science by IBM on Coursera (see https://github.com/leofabrizio/clustering_neighborhoods for my final project)
- **fMRI analyses:** SPM8
- **Stimuli Generation:** Psychtoolbox
- **Eye movements recording systems:** Eye-Tracker ASL 6000, CRS Eye-tracker
- **Operating systems and other software:** Windows, Linux Mint, Microsoft Office, LibreOffice, Statsoft Statistica, Gimp

Driving licence

Car

Journal papers

Leo, F., Sandini, G., Sciutti, A., “Mental rotation skill shapes haptic exploration strategies”, *IEEE Transactions on Haptics*, 2022, DOI: 10.1109/TOH.2022.3162321

Leo, F., Nataletti, S., Brayda, L., “Non-informative vision improves spatial tactile discrimination on the shoulder but does not influence detection sensitivity”, *Experimental Brain Research*, 2020, DOI: 10.1007/s00221-020-05944-2

Nataletti, S., **Leo, F.**, Seminara, L., Trompetto, C., Valle, M., Dosen, S., Brayda, L., “Temporal Asynchrony but Not Total Energy Nor Duration Improves the Judgment of Numerosity in Electrotactile Stimulation”, *Frontiers in Bioengineering and Biotechnology*, 2020, 8, 555; doi: 10.3389/fbioe.2020.00555

Leo, F., Ferrari, E., Baccelliere, C., Zarate, J., Shea, H., Cocchi, E., Brayda, L., "Enhancing general spatial skills of young visually impaired people with a programmable distance discrimination training: a case control study", *Journal of NeuroEngineering and Rehabilitation*, 2019, <https://doi.org/10.1186/s12984-019-0580-2>

Leo, F., Tinti, C., Chiesa, S., Cavaglià, R., Schmidt, S., Cocchi, E., Brayda, L., "Improving spatial working memory in blind and sighted youngsters using programmable tactile displays", *SAGE Open Medicine*, 2018, doi: 10.1177/2050312118820028

Brayda, L., **Leo, F.***, Baccelliere, C., Ferrari, E., Vigni, C., "Updated tactile feedback with a pin array matrix helps blind people to reduce self-location errors", *Micromachines*, 2018, 9(7), 351; doi: 10.3390/mi9070351

Leo, F., Cocchi, E., Brayda, L., "The effect of programmable tactile displays on spatial learning skills in children and adolescents of different visual disability", *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 2017, Jul 25(7): 861-872, DOI: 10.1109/TNSRE.2016.2619742. Epub 2016 Oct 20

Leo, F., Noppeney, U., "Conditioned sounds enhance visual processing", *PLoS One*, 2014, Sep 9(9):e106860, DOI: 10.1371/journal.pone.0106860

Leo, F., Romei, V., Freeman, E., Làdavas, E., Driver, J., "Looming sounds enhance orientation sensitivity for visual stimuli on the same side as such sounds", *Experimental Brain Research*, 2011, Sep 213(2-3): 193-201, DOI: 10.1007/s00221-011-2742-8

Bertini, C., **Leo, F.**, Avenanti, A., Làdavas, E., "Independent mechanisms for ventriloquism and multisensory integration as revealed by theta-burst stimulation", *European Journal of Neuroscience*, 2010, 31(10): 1791-1799, DOI: 10.1111/j.1460-9568.2010.07200.x

Bertini, C., **Leo, F.**, Làdavas, E., "Temporo-nasal asymmetry in multisensory integration mediated by the superior colliculus", *Brain Research*, 2008, 1242: 37-44, DOI: 10.1016/j.brainres.2008.03.087

Leo, F., Bolognini, N., Passamonti, C., Stein, B., Làdavas, E., "Cross-modal localization in hemianopia: new insights on multisensory integration", *Brain*, 2008, 131(3): 855-865, DOI: 10.1093/brain/awn003

Leo, F., Bertini, C., di Pellegrino, G., Làdavas, E., "Multisensory integration for orienting responses in humans requires the activation of the superior colliculus", *Experimental Brain Research*, 2008, 186(1): 67-77

Bolognini, N., **Leo, F.**, Passamonti, C., Stein, B., Làdavas, E., "Multisensory-mediated auditory localization", *Perception*, 2007, 36(10): 1477-1485

Ciamarelli, E., **Leo, F.**, Del Viva, M., Burr, D. & Làdavas, E., "The contribution of prefrontal cortex to global perception", *Experimental Brain Research*, 2007, Aug 181(3): 427-434

* first co-authorship

Book chapters

Leo, F., Cocchi, E., Ferrari, E., Brayda, L., "Maps as ability amplifiers: using graphical tactile displays to enhance spatial skills in people who are visually impaired", in *Haptic Interfaces for Accessibility, Health, and Enhanced Quality of Life*, 2020, editors McDaniel T., Panchanathan S., Springer, Cham. https://doi.org/10.1007/978-3-030-34230-2_3

Conference papers

Brayda, L., **Leo, F.**, Baccelliere, C., Vigni C., Cocchi, E. "A refreshable tactile display effectively supports cognitive mapping followed by orientation and mobility tasks. A comparative multi-modal study involving blind and low-vision participants", In 2019 Workshop on Multimedia for Accessible Human computer Interface (MAHCI'19), October 25, 2019, Nice, France. ACM, NY, NY, USA. 8 pages. <https://doi.org/10.1145/3347319.3356840>

Leo, F., Violin, T., Inuggi, A., Raspagliesi, A., Capris, E., Cocchi, E., Brayda, L. "Blind persons get improved sense of orientation and mobility in large outdoor spaces by means of a tactile pin-array matrix", In CHI'19 Workshop on Hacking Blind Navigation, May 04, 2019, Glasgow, Scotland

Leo, F., Baccelliere, C., Waszkielewicz, A., Cocchi, E., Brayda, L. "Tactile symbol discrimination on a small pin-array display", In 2018 Workshop on Multimedia for Accessible Human Computer Interface (MAHCI'18), October 22, 2018, Seoul, Republic of Korea

Kunchornsup, W., **Leo, F.**, Bertora, F., Fragouli, D., Petroni, S., Brayda, L., "Study of static tactile detection threshold via pneumatically driven polydimethylsiloxane membrane", Proc. of Workshop TacTT2014 (held conjunction of ACM ITS2014), Dresden, Germany, 2014, ceur-ws.org/Vol-1324/paper_11.pdf

Abstract publications

Leo, F., Jacob, R., Benz, K., Kiehne, M., Noesselt, T., "Temporal expectancy selectively enhances audiovisual target detection", *Multisensory Research*, 2013, 26: 166-166

Leo, F., Noppeney, U., "Conditioning influences audio-visual integration by increasing sound saliency", *i-Perception*, 2011, 2(8): 762

Del Viva, M., Burr, D.C., Danti, S., **Leo, F.**, "Disambiguation of motion direction by first-order and second-order motion mechanisms", *Perception*, 2003, 32: 102

Oral and poster communications (partial)

Leo, F., Violin, T., Inuggi, A., Raspagliesi, A., Capris, E., Cocchi, E., Brayda, L. "Blind persons get improved sense of orientation and mobility in large outdoor spaces by means of a tactile pin-array matrix" Innovation in Rehabilitation Technologies, Genoa (5 March, 2019) *talk*

Leo, F., Baccelliere, C., Cocchi, E., Brayda, L. "Towards autonomous rehabilitation: repeated tactile feedback can improve the construction of cognitive maps prior to exploration in visually impaired persons" Limitless! Augmentation of Brain Function, Lausanne (19-21 September, 2018) *poster*

Leo, F., Tinti, C., Chiesa, S., Cavaglià, R., Schmidt, S., Brayda, L. "Improving visuo-spatial abilities in blind youngsters using programmable tactile displays" Cognitive Neuroscience Society Annual Meeting (CNS 2017), San Francisco (27 March, 2017) *poster*

Leo, F., Tinti, C., Chiesa, S., Cavaglià, R., Schmidt, S., Brayda, L. "BlindPAD: proposta di uno strumento per incrementare le abilità visuo-spaziali nei non vedenti" XXV Congresso Nazionale AIRIPA, Torino (08 October, 2016) *talk*

Leo, F., Chiesa, S., Schmidt, S., Tinti, C., Brayda, L. "Recalling graphical traits with programmable tactile displays improves spatial abilities in young visually impaired persons" *The European Workshop on Imagery and Cognition* (EWIC 2016), Paris (06 June, 2016) *poster*

Leo, F. "Tecnologia a supporto della disabilità" *Festival della Scienza*, Genova (24 October, 2015) *talk*

Leo, F. "On evaluating usability of a touch-based tablet for blind and severely visually impaired children" *RIC – IIT Workshop on Robotic and Interactive Technologies for Neuroscience and Neurorehabilitation*, Arenzano (31 Aug – 2 Sep, 2015) *poster*

Leo, F., "Insights on the role of the superior colliculus in human multisensory integration" *Masterkolloquium Klinische und Kognitive Neurowissenschaft*, Magdeburg (04 July, 2013) *talk*

Leo, F., Jacob, R., Benz, K., Kiehne, M., Noesselt, T., "Temporal expectancy selectively enhances audiovisual target detection" *International Multisensory Research Forum 2013* (IMRF), Jerusalem (june, 2013) *poster*

Leo, F., "Auditory conditioning effect on audio-visual integration" *C/MeC*, Trento (11 june, 2012) *talk*

Leo, F., Noppeney, U., "Auditory conditioning effect on audio-visual integration" *Otto von Guericke University*, Magdeburg (2 may, 2012) *talk*

Leo, F., Noppeney, U., "Monetary conditioning influences audio-visual integration by increasing sound saliency" *SINP*, Bologna (18-19 november, 2011) *talk*

Leo, F., Noppeney, U., "Conditioning influences audio-visual integration by increasing sound saliency" *International Multisensory Research Forum 2011* (IMRF), Fukuoka (october, 2011) *poster*

Leo, F., Bertini, C., Avenanti, A., Làdavas, E., "Independence of visual bias and audio-visual integration" *workshop on Cognitive Neuropsychology*, Brixen (25-31 january, 2009) *talk*

Leo, F., Bertini, C., Làdavas, E., "Temporo-nasal asymmetry in multisensory integration mediated by the superior colliculus" *International Multisensory Research Forum 2008* (IMRF), Hamburg (16-19 july, 2008) *poster*

Leo, F., Bertini, C., Làdavas, E., "Multisensory integration in humans requires the activation of the superior colliculus" *SINP*, Bologna (09-10 may, 2008) *talk*

Leo, F., Passamonti, C., Bertini, C., Bolognini, N., Làdavas, E., "Cross-modal localization in hemianopia" *workshop on Cognitive Neuropsychology*, Bressanone (21-26 january, 2007) *talk*

Leo, F., Passamonti, C., Bertini, C., Làdavas, E., "Multisensory-mediated auditory localization in hemianopic patients" *2nd meeting of the European Societies of Neuropsychology* (EuroNPsy), Toulouse, Centre des Congrès Pierre Baudis (18 -20, october 2006) *poster*

Leo, F., Passamonti, C., Bertini, C., Làdavas, E., "Multisensory-mediated auditory localization" *International Multisensory Research Forum 2006* (IMRF), University of Dublin, Trinity College (18-21 june, 2006) *poster*

Del Viva, M., Burr, D.C., Danti, S., **Leo, F.**, "Disambiguation of motion direction by first-order and second-order motion mechanisms" *European Conference on Visual Perception* (ECVP), Paris (1-5 september, 2003) *poster*

AD HOC REFEREE FOR

Experimental Brain Research, Cerebral Cortex, Neuroimage, PLOS One, Frontiers in Integrative Neuroscience, Frontiers in Computational Neuroscience, Multisensory Research, Transactions on Haptics, Health Expectations, Universal Access in the Information Society, SAGE Open

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