

# EUROPEAN CURRICULUM VITAE FORMAT



## PERSONAL INFORMATION

Name

**BANFI TOMMASO**

E-mail

Nationality

Date of birth

## EDUCATION AND TRAINING

- (March 2020-now) Co-founder and Head of Machine Learning – YKRobotics s.r.l
- (October 2019-October2021) Post-doctoral fellow. Head of software and hardware development – Scuola Superiore Sant’Anna, The BioRobotics Institute, Work Package 3 - INPECO Advanced Laboratory Automation project.
- (February 2019-February 2020) Deep learning consultant – Scuola Superiore Sant’Anna, The BioRobotics Institute, INPECO Advanced Laboratory Automation project.
- (January 2019-April 2019) Deep learning architect-developer –Private Company
- (January 2017-now) Co-founder and lead developer – Private Company
- (October 2016-May 2020) PhD in Biorobotics, Scuola Superiore Sant’Anna, The BioRobotics Institute. Computer Integrated and Innovative Robotic Platforms for Surgery. Graduated summa cum laude.
- (2014-2016) “Scienze e Tecniche delle Attività Motorie Preventive e Adattate” postgraduate studies program, University of Pisa. Graduated summa cum laude.
- Fry the Brain project personnel, GR-2011-02348998 Italian Ministry of Health - P.I. Dr. Ugo Faraguna.
- External collaborator of IRCCS Stella Maris, Department of Clinical Neuroscience.
- (2013-2020) Intern Student at SonnoLab SanZeno, a sleep physiology/neuroscience/neurophysiology division of the Department of Translational Research on New Technologies in Medicine and Surgery, - P.I. Dr. Ugo Faraguna
- (2011-2014) “Scienze Motorie” undergraduate studies, University of Pisa, Graduated summa cum laude “*con lode e dignità di stampa*”.
- (2010-2011) Physics undergraduate program studies, University of Pisa.
- (2005-2010) Student at “Liceo Classico Enrico Fermi”, graduated in 2010 (Maturità Classica).

MOTHER TONGUE

**ITALIAN**

OTHER LANGUAGES

**ENGLISH AND FRENCH**

- Reading skills
- Writing skills
- Verbal skills

ENGLISH (VERY GOOD) AND FRENCH (BASIC)

ENGLISH (VERY GOOD) AND FRENCH (BASIC)

ENGLISH (VERY GOOD) AND FRENCH (BASIC)

SOCIAL SKILLS  
AND COMPETENCES

- (MAY 2016- MAY 2019) MUNICIPAL COUNCILOR OF THE MUNICIPALITY OF MONTESCUDAIO. APPLIED AS MUNICIPAL COUNCILOR “CONSIGLIERE COMUNALE” IN THE ELECTION OF LOCAL MUNICIPALITY ADMINISTRATION
- (2012-2016). COACH AT “GRUPPO SPORTIVO CANOTTAGGIO VIGILI DEL FUOCO C.TOMEI LIVORNO” A ROWING SPORT DIVISION OF ITALIAN FIRE FIGHTERS IN LEGHORN. SCOUT FROM THE AGE OF 8 TO THE AGE OF 15.

ORGANISATIONAL SKILLS  
AND COMPETENCES

- COACH AT “GRUPPO SPORTIVO CANOTTAGGIO VIGILI DEL FUOCO C.TOMEI LIVORNO” A ROWING SPORT DIVISION OF ITALIAN FIRE FIGHTERS IN LEGHORN.
- ASSISTANT COACH OF THE ITALIAN REPRESENTATIVE JUNIOR EIGHT CREW THAT PARTICIPATED AND WON THE “COUPE DE LA JEUNESSE 2015”, HEAD COACH STEFANO LARI G.S. VVF C. TOMEI.

## TECHNICAL SKILLS AND COMPETENCES

- PYTHON CODER WITH EXPERIENCE IN R&D PROJECTS INVOLVING MACHINE LEARNING, DEEP LEARNING AND SIGNAL PROCESSING
- DEEP LEARNING FRAMEWORKS KERAS, TENSORFLOW
- DESIGN OF DL HARDWARE CLUSTERS AND SERVERS
- MATLAB: ELECTROENCEPHALOGRAPHY ANALYST, EEGLAB TOOLBOX, ARTIFICIAL NEURAL NETWORKS, STATISTICAL ANALYSIS, MICROSOFT KINECT v2, GUIs
- EEG DATA ACQUISITION USING MICROMED SYSTEMS UP TO 64CH
- DEVELOPMENT OF WEARABLE BIOPOTENTIAL MEASUREMENT DEVICES FOR EEG RECORDING AND OF WRIST WORN ACTIGRAPHIC DEVICES EMBEDDING IMUS, PHOTOPLETHYSMOGRAPHY AND SEVERAL TYPES OF RADIOS (BLE, WI-FI, IEEE 802.15.4)
- DEVELOPMENT OF AD HOC INTEGRATED ELECTRONICS, DESIGN OF ELECTRONIC CAD
- DEVELOPMENT OF CUSTOM DATA LOGGING DEVICES BASED ON RASPBERRY PI, ARDUINO DEVELOPMENT, AND CUSTOM PCB BOARD EMBEDDING MEMS SENSORS, WITH EXPERTISE IN USE OF INERTIAL MEASUREMENT UNITS
- DEVELOPMENT OF IOT SOLUTIONS, EXPERIENCE USING PARTICLE SOCS
- DEVELOPMENT OF AD HOC OPTO ELECTRONICAL SYSTEMS FOR VIS-NIR SPECTROSCOPY
- MICROSOFT WINDOWS AND LINUX OPERATING SYSTEMS
- SOLIDWORKS CAD, 3D PRINTING (FUSED FILAMENT FABRICATION) FOR RAPID PROTOTYPING
- INTEL REALSENSE DEPTH+RGB CAMERAS
- NVIDIA JETSON TX2, JAVIER AGX, JAVIER NANO, EMBEDDED DL HARDWARE
- LABSTREAMINGLAYER SYNCHRONIZATION MIDDLEWARE
- TOBII AND PUPIL EYE TRACKING SYSTEMS
- DESIGNING AND BUILDING AD-HOC SERVERS, COMPUTERS (FOR GENERAL PURPOSE COMPUTATIONS AND SPECIFICALLY FOR DEEP LEARNING COMPUTING TASKS)
- VIRTUAL MACHINES
- CREATION AND MAINTENANCE OF MEDIUM SIZED (UP TO ~100 MACHINES) LOCAL AREA NETWORKS EMBEDDING MULTIPLE MANAGED-UNMANAGED SWITCHES, ROUTERS, FIREWALLS, NAS STORAGE, WI-FI ACCESS POINTS, PRINTERS AND IP CAMERAS
- ADOBE PHOTOSHOP AND ILLUSTRATOR ADVANCED USER.
- MICROSOFT OFFICE
- HTML AND WORDPRESS USER

## ARTISTIC SKILLS AND COMPETENCES

## OTHER SKILLS AND COMPETENCES

- SUPERVISED AND MENTORED STUDENTS THROUGHOUT THE BACHELOR-MASTER THESIS PREPARATION AND DEFENSE: 8 MSc. BIOMEDICAL ENGINEERING, 2 MSc. "Scienze e Tecniche delle Attività Motorie Preventive e Adattate", 1 BSc. "SCIENZE MOTORIE".
- MECHANICAL WORKSHOP EXPERIENCE, SPECIFICALLY ON TWO STROKE ENGINES
- SMALL, ENGINE PROPELLED, BOAT DRIVER.

## DRIVING LICENCE(S)

## LECTURES AND COURSES

University of Pisa, Department of clinical and experimental medicine, **Inside the mechanisms of muscle remodelling.**

University of Pisa, Department of clinical and experimental medicine, **Effect of sleep deprivation on athletic performance.**

University of Pisa, Department of Information Engineering, **Design and development of an analogue front end for biopotential measurement.**

**PATENTS:** Pedrazzini G A, Ciuti G, Melillo T, **Banfi T**, Cignoni A, Dal Canto M, Blundo A – *Dispositivo di supporto alla diagnosi dermatologica*. Italian patent BIT24380-GN/gp, 2021.

**SCIENTIFIC PUBLICATIONS**  
Papers:

Palagini L, Mauro M, **Banfi T**, Mazzei I, Gronchi A, Bonanni E, Maestri M, Riemann D, Carney C.E., Dell'Osso L - *Daytime rumination as a feature of insomnia disorder: sleep related cognition is not merely a problem of the night*. Archives Italiennes de Biologie. 2015 Jun-Sep;153(2-3):239-47. doi:10.12871/0003982920152349.

Sesso G, Bat-Pitault F, Guyon A, Plancoulaine S, **Banfi T**, Milioli G, Parrino G, Faraguna U, Franco P - *Electrophysiological and microstructural features of sleep in children at high risk for depression: a preliminary study*. Sleep Medicine 2017 Aug;36:95-103. doi: 10.1016/j.sleep.2017.05.013

Yung D\*, **Banfi T\***, Ciuti G, Arezzo A, Dario P, Koulaouzidis A. *Musculoskeletal injuries in gastrointestinal endoscopists: a systematic review*. Expert Reviews in Gastroenterology and Hepatology. Oct;11(10):939-947. doi:10.1080/17474124.2017.1356225.

Diolaiuti F, **Banfi T**, Santarcangelo E.L - *Hypnotizability and the peripersonal space*. The International Journal of Clinical and Experimental Hypnosis 2017 Oct-Dec;65(4):466-478. doi:10.1080/00207144.2017.1348868.

Campioni L, **Banfi T**, Santarcangelo E.L - *Cortical representation of visual and kinesthetic mental images as a function of hypnotizability and gender* International Journal of Psychophysiology 2018 Sept.

**T Banfi**, E Coletto, P.d'Ascanio, P. Dario, A. Menciacchi, U Faraguna\*, G. Ciuti\* - *Effect of sleep deprivation on surgical dexterity*. Frontiers in Neurology 2019 Jun. doi: 10.3389/fneur.2019.00595

M P Tramonti Fantozzi\*, **T Banfi\***, V de Cicco, M. Barresi, E. Cataldo, D. de Cicco, L. Bruschini, P.d'Ascanio, G. Ciuti, U. Faraguna, D. Manzoni - *Assessing Pupil-Linked Changes in Locus Coeruleus-Mediated Arousal Elicited by Trigeminal Stimulation*. Journal of Visualized Experiments, 2019 Jul.

F. Cucchiara, P. Frumento, **T Banfi**, G. Sesso, M. di Galante, P.d'Ascanio, G. Valvo, F. Sicca, U. Faraguna - *Electrophysiological features of sleep in children with Kir4.1 channel mutations and Autism-Epilepsy Phenotype: a preliminary study*. SLEEP 2020. doi: 10.1093/sleep/zsz255

**T Banfi**, N Valigi, M. di Galante, P.d'Ascanio, G Ciuti, U. Faraguna - *Efficient embedded sleep wake classification for open-source actigraphy*. Scientific Reports 2021. doi: 10.1038/s41598-020-79294-y

A Blundo, A Cignoni, **T Banfi**, G Ciuti - *Comparative analysis of diagnostic techniques for melanoma detection: a systematic review of diagnostic test accuracy studies and meta-analysis*. Frontiers in medicine 2021. doi: 10.3389/fmed.2021.637069

F Cini\*, **T Banfi\***, G Ciuti, L Craighero, M Controzzi - *The relevance of warning signal timing in human-robot collaborative manipulation*. Science Robotics 2021. doi: 10.1126/scirobotics.abg1308

Papers in press: -

- Papers in review: M. Nardelli, V. Catrambone, G. Grandi, **T. Banfi**, R. M. Bruno, E. P. Scilingo, U. Faraguna, G. Valenza - *Activation of brain-heart axis during REM sleep: a trigger for dreaming*. American Journal of Physiology-Regulatory, Integrative and Comparative Physiology.
- Oral communications at international meetings: **T. Banfi**, M.C. Di Lieto, C. Pecini, P. Brovedani, A.M. Chilosi, V. Marchi, S. Sarasso, F. Artoni, A. Guzzetta, G. Cioni, U. Faraguna - *Working memory training in children with periventricular leukomalacia: insights from sleep electrophysiology*. World Sleep Federation. Istanbul 2015
- T. Banfi**, A. Cignoni, G. Ciuti - *Drowsiness detection among surgeons: development of a wearable EEG device*. Joint Workshop on New Technologies for Computer/Robot Assisted Surgery (CRAS). Genova 2019
- Abstracts and meeting proceedings: MP Tramonti Fantozzi, F Artoni, M Di Galante, L Briscece, V De Cicco, D Manzoni, **T Banfi**, S Micera, U Faraguna, MC Carboncini- *Possible Effect of the Trigeminal Nerve Stimulation on Auditory Event-Related Potentials* 2018 Sept.
- T. Banfi**, U. Faraguna, P. Dario, A. Menciassi, G. Ciuti - *Objective and longitudinal tracking of sleep among surgeons: experimental test bench and methodology*. Congresso A.I.M.S. Bolzano 2017
- T. Banfi**, M. Di Galante, U. Olcese, P. d'Ascanio, R.M. Bruno, U. Bonucelli, E. Bonanni, U. Faraguna - *Actigraphic sleep detection: an artificial intelligence approach*. European Sleep Research Society. Bologna 2016
- R.M. Bruno, M. Di Galante, **T. Banfi**, M. Di Pilla, L. Ghiadoni, S. Taddei, U. Faraguna - *Impact of 24-h blood pressure monitoring on objective sleep duration and fragmentation in resistant hypertensive patients*. European Sleep Research Society. Bologna 2016
- R.M. Bruno, U. Faraguna, E. Di Coscio, M. Maesti, M. Fabbrini, L. Carnicelli, M. Di Galante, **T. Banfi**, M. Cargioli, L. Ghiadoni, E. Bonanni, S. Taddei - *Increased sleep fragmentation is associated with non-dipping pattern in resistant hypertensive patients*. European Sleep Research Society. Bologna 2016
- S. Varani, **T. Banfi**, R. Biancotti, P. Orsini, L. Rocchi, P. d'Ascanio, U. Faraguna - *Sleep-like behaviour in a sensitive plant (Mimosa Pudica)*. World Sleep Federation. Istanbul 2015
- R.M. Bruno, M. Maestri, E. Di Coscio, M. Fabbrini, M. Di Galante, **T. Banfi**, M. Cargioli, L. Ghiadoni, E. Bonanni, U. Faraguna, S. Taddei - *Increased sleep latency and reduced sleep efficiency are associated with non-dipping pattern in resistant hypertensive patients*. World Sleep Federation. Istanbul 2015
- M. Rondelli, M. Di Galante, **T. Banfi**, P. d'Ascanio, G. Bernardi, E. Bonanni, U. Faraguna - *Effects of napping on impulse control*. World Sleep Federation. Istanbul 2015
- Tommaso Banfi**, Francesca Mastorci, Guido Giardini, Lorenza Pratali e Ugo Faraguna - *Consequences on sustained attention of self imposed sleep deprivation during a mountain ultra marthon*. Federation of European Neuroscience Societies FENS Forum 2014
- Ugo Faraguna, Francesca Mastorci, **Tommaso Banfi**, Guido Giardini, Lorenza Pratali - *Impact of a mountain ultra-marathon on sustained attention*. X World Congress on High Altitude Medicine and Physiology & Mountain Emergency Medicine Bozen 2014 - International society for Mountain Medicine ISMM.

U. Faraguna, U. Olcese, M. Di Galante, **T. Banfi**, P. d'Ascanio, E. Bonanni - *Monitoring sleep in the age of smartphones: a validation procedure of accelerometric devices*. X World Congress on High Altitude Medicine and Physiology & Mountain Emergency Medicine Bozen 2014 (ISMM).

U. Faraguna, U. Olcese, M. Di Galante, **T. Banfi**, P. d'Ascanio, E. Bonanni - *Monitoring sleep in the age of smartphones: a validation procedure of accelerometric devices*. The Physiological Society of Italy SIF 2014 Capri Italy.