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25 years old

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Education

I started my education as a Computer Science major and then specialised in Artificial Intelligence (AI) during my research master's degree. Finally my PhD thesis was at the crossroads of AI, Human Computer Interaction (HCI) and the Neurosciences.

2012—2015 **PhD in Computer Science** at Grenoble Informatics Laboratory (LIG), Engineering Human-Computer Interaction research group (EHCI), Grenoble, France. The defence took place on October 23, 2015.

2014—2015 **RES Label** (Recherche et Enseignement Supérieur/Research and Higher Education Teaching) pedagogy courses. Various courses including pedagogical techniques, class dynamics, conflict resolution, grading, psychological support. Grenoble, France.

2010—2012 **Research Master in Computer Science in Artificial Intelligence and the Semantic Web.** Joseph Fourier University / École Nationale Supérieure d'Informatique et de Mathématiques Appliquées de Grenoble (Ensimag), Grenoble, France. *With Honours.* Best grade in the promotion for the research project: 16.5/20.

2009—2010 **Intelligent Systems and Networks diploma (BSc hon).** Economics and Information Technology Institute in Zaporozhie, Ukraine. *Graduated Top of the Class. First Class Honours.*

2005—2009 **Adjoined Specialist in Computer System and Network Services diploma (BSc hon).** Economics and Information Technology College in Zaporozhie, Ukraine. *Graduated Top of the Class. First Class Honours.*

Work Experience

My first work experiences were the research internships that I did during my studies, followed by the teaching assistant positions that I have assumed during my PhD thesis.

2014—2015 **Teaching Assistant** at Université Pierre Mendès France (UPMF). Computational Cognitive Psychology Department, Grenoble, France.

- 2013 **Teaching Assistant** at IUT 1 Grenoble (translated as *University Institutes of Technology*).
Multimedia Internet programming & design Department. Grenoble, France.
- 2012 **Master Research Internship.** Multimodal Combination of Eye-Tracking and Brain
Computer Interfaces for Games. Grenoble, France
- 2012 **Internship.** Development of a touristic spot/activity record editor. LIG-EHCI. Grenoble,
France.
- 2011 **Master Project Internship.** Development of a 3D application controlled by Brain
Computer Interaction. LIG-EHCI. Grenoble, France.

Ph.D. Thesis

Title	Co-Learning for Brain Computer Interfaces (BCIs).
Advisor	Franck Tarpin-Bernard, Professor at Joseph Fourier University, the president of the Happy Neuron SBT group, member in the EHCI research group.
Funding	Grenoble INP University, "Innovative Projects".
Description	Traditionally, BCI research has been focussed on the signal processing and medical aspects of BCIs, while the aspects pertaining to interaction, usability and convenience, have been studied more scarcely. Commonly, training sessions are slow and tiring. In the context of the <i>CA-ICO</i> (Co-apprentissage/Interfaces Cerveau Ordinateur, or in English Co-learning/Brain Computer Interfaces) project of <i>LIG-EHCI</i> in collaboration with <i>GIPSA-lab</i> and funded by the <i>Grenoble INP</i> University and of my thesis research, I am working towards putting co-learning between the system and the user at the centre of BCI system design. The aim is to minimize offline training phases and maximize the user experience of BCIs. The ultimate goal is to bring BCI systems outside of the lab with a performance level comparable to more traditional and robust interaction modalities.
Keywords	Brain Computer Interfaces, Co-Learning, Feedback.

Publications

International Journals (3)

- [TOCHI'15] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Conceptual Priming for In-game BCI Training.** *ACM Trans. Comput.-Hum. Interact.* (To appear). 2015. **5-year Impact Factor: 1.37**

Will be presented at CHI 2016.

[TOCHI'15] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Adding Human Learning in Brain Computer Interfaces (BCIs): Towards a Practical Control Modality.** *ACM Trans. Comput.-Hum. Interact.* 22, 3, Article 12 (May 2015), 37 pages. DOI=10.1145/2723162 <http://doi.acm.org/10.1145/2723162>. **5-year Impact Factor: 1.37**

Will be presented at CHI 2016.

[TCIAG'13] N. Kosmyna and F. Tarpin-Bernard. **Evaluation and comparison of a multimodal combination of BCI paradigms and Eye tracking with affordable consumer-grade hardware in a gaming context.** 2013. In *IEEE Transactions on Computational Intelligence and AI in Games*. Volume 5. Issue 2. DOI <http://dx.doi.org/10.1109/TCIAIG.2012.2230003>. **5-year Impact Factor: 1.167**

International Conferences: Full Papers (2)

[EUSIPCO '15] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Operationalization of Conceptual Imagery for BCIs.** *EUSIPCO'2015*. In *Proceedings of the 23d European Signal Processing Conference*. Aug. 2015.

Presented.

[INTERACT'15] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Towards Brain Computer Interfaces for Recreational Activities: Piloting a Drone.** 15th IFIP TC.13 International Conference on Human-Computer Interaction – INTERACT 2015. *Springer Berlin Heidelberg* (2015).

Conference of A level (CORE Ranking) / 2014 Acceptance Rate: 29%. Presented.

[EMBS'13] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Towards a General Architecture for a Co-Learning of Brain Computer Interfaces** in *Proceeding of the 6th International IEEE EMBS Conference on Neural Engineering*, San Diego, USA, November 2013.

Conference of A level (CORE Ranking). Presented.

National Conferences: Full Papers (1)

[ErgoIHM'12] N. Kos'myna and F. Tarpin-Bernard. **Une combinaison de paradigmes d'interaction cerveau-ordinateur et suivi du regard pour des interactions multimodales.** in *Ergonomie et Interaction Homme-Machine* ErgoIHM'2012.

Presented.

International Conferences: Demo Papers (2)

[UBICOMP'14] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Drone, Your Brain, Ring Course: Accept**

the Challenge and Prevail! *UBICOMP'14 ADJUNCT*. 2014. 243-246.

Conference of A+ level (CORE Ranking). Presented.

[CHI'14] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Bidirectional Feedback in Motor Imagery BCIs: Learn to Control a Drone within 5 Minutes.** *CHI'14 Extended Abstracts on Human Factors in Computing Systems*. 2014. 479-482.

Conference of A+ level (CORE Ranking) / Acceptance Rate: 34%. Presented during 3 days.

General Public Science Articles (1)

[ACM Interactions'15] N. Kosmyna, F. Tarpin-Bernard and B. Rivet. **Brains, Computers, and Drones: Think and Control!** *ACM Interactions* 22, 4 (June 2015), 44-47. DOI=10.1145/2782758 <http://doi.acm.org/10.1145/2782758>.

Dissemination

See <http://kosmina.eu> for videos and photos of the press coverage and demonstrations.

Radio

Live radio interview on **France Bleu Isère** on the 3rd of April 2015 about my work on Brain Computer Interfaces.

Television

Télé Grenoble, 9th of April 2015 – Interview and demonstration in the hospital regarding the BCI drone piloting application.

France 3 Alpes, 18th of March 2015 – News segment about neuroscientific research showing the BCI drone piloting application.

France 3 Rhone-Alpes, 17th of March 2015 – Live interview and demonstration about/of the BCI drone piloting application the *Week of the Brain 2015 (La Semaine du Cerveau 2015)*.

Télé Grenoble, 13th of March 2015 – Interview regarding the *Week of the Brain 2015 (La Semaine du Cerveau 2015)*, BCI drone piloting demo.

Print & Online Press

Article (Paper, Online) in “Dauphiné Libéré”, Thursday, 14th of March 2015 – Coverage of the drone demonstrations for the *Week of the Brain 2015*.

Article (Online) on www.placegrenet.fr, Thursday, 14th of March 2015.

Article (Paper) in “Les Affiches”, 13th of March 2015 – Coverage of the drone demonstrations for the Week of the Brain 2015.

Article on the Grenoble Doctoral School College [newsletter and website](#).

Podcast of Grenoble University on the Drone Demo for the *Week of the Brain 2015 (La Semaine du Cerveau 2015)*, **30 minute video feature**.

Article “[Sciences and Brains in the Lucie Aubrac college](#)” (in french). **18th of June 2015**.

Video Report of [AgenceInfoLibre](#) about Innorobo 2015 with a segment about my demonstration for [smart home control by the brain](#). **July 1 to 3, 2015**.

Exhibitions and Demonstrations

Demonstration of the brainy drone at TechShop, Paris, France. 31 October 2015.

Demonstration of the brainy drone at ImaginaScience, Annecy, France. 14-15 October 2015.

Demonstration of the brainy drone at Grenoble Mini Maker Faire. 3-4 October 2015.

Demonstration at [InnoRobo](#) in Lyon on July 1 to 3, 2015 for [smart home control by the brain](#).

Demonstration of the brainy drone for the children of VIRA association. June 2015.

Demonstration of the brainy drone at the “Informatics Days” in Caen, France. June 2015.

Demonstration of the brainy drone at the **Persycup robotics cup 2015**.

Three demonstrations for the « *Remue Méninges 2015* » festival (for the children) – Piloting a Drone with a Brain Computer Interface using conceptual imagery and EEG headset EMOTIV EPOC. The purpose of the demo was introducing *children* to research in the neurosciences and in Human Computer Interaction through a practical and recreational application to piloting a drone with one’s brain. About 100 bystanders for each of the demonstrations, over 40 children participated in the demonstrations.

Three demonstrations for the *Week of the Brain 2015 (La Semaine du Cerveau 2015)* – Piloting a Drone with a Brain Computer Interface using conceptual imagery and EEG headset EMOTIV EPOC. Grenoble Hospital, Grenoble Children Hospital, Grenoble University. About 200 bystanders for each of the demonstrations, over 40 people participated in the demonstrations.

Demonstration of Piloting a Drone with a BCI using conceptual imagery and EEG headset EMOTIV EPOC for 3rd year students in signal processing. At Gipsa-lab, March 2015.

UBICOMP 2014 Demonstration in Seattle. Piloting a Drone with a Brain Computer Interface using conceptual imagery and EEG headset EMOTIV EPOC. About 30 people participated.

CHI 2014 Interactivity Demonstration in Toronto. Piloting a Drone with a Brain Computer Interface using motor imagery and a g.tec USBamp. Photo and social media coverage on my website. About 40 people, including science fiction writer Margaret Atwood participated.

Presentation of my work during the Ph.D Students Day, 2014.

Presentation of my work during “my Ph.D thesis in 180s”, 2014.

Presentation of my work during Grenoble Cognition Day, 2013.

Professional Courses

In France, all doctoral students have to follow transversal courses useful for general employment. Moreover, for students with additional teaching assistant responsibilities, additional courses have to be followed.

Name	Volume	Assignment Work
Strategic and Technological Management	33h	Management course for “experts”.
Entrepreneurship from A to Z	21h	Proposing a company idea and developing a full business plan and strategies for funding and attracting investors.
Industrial Research and Development Marketing	24h	Proposing a new sub-brand of an existing technology or service brand and fully developing the branding strategy: target demographic, market expansion, risk factors, etc.

Teaching Experience

I have mainly taught Computer Science courses to both computer science majors and to cognitive science majors specializing in computational methods.

Name	Location/Year	Volume	Responsibilities
Multimedia Web development, Graduate Course.	2014. M2 WIC (Web, Informatics and Knowledge). UPMF Social and Human Sciences.	24h	Creating lecture slides, Creating practical session material and project assignments, Lectures, Supervising practical sessions.
Introduction to Programming and Algorithms, 1st year undergraduate course.	2014. 1 st year undergrad in Social Sciences and Applied Mathematics. UPMF Social and Human Sciences.	24h	Supervising Practical Sessions.
Introduction to Object Oriented Programming, 2nd year undergraduate course.	2014. 1 st year undergrad in Social Sciences and Applied Mathematics. UPMF Social and Human Sciences.	20h	Supervising Practical Sessions.
Brain Computing and Multimodal Interaction, Graduate Course.	2013. Master 2 Research Ubiquitous and Interactive Systems. UJF Informatics and Applied	6h	Lectures.

	Mathematics Department.		
Introduction to Algorithms , 1 st year undergraduate course.	2013. IUT1 Grenoble Multimedia Internet programming & design Department.	34h	Lectures, Supervising Practical Sessions.

Project Supervision

Supervision of the ARMIND project (4 students) that was registered for the defiH challenge (<http://lemondeinformatique.fr/defih>). The aim of the project was to command a robotic arm with a BCI in order to assist people suffering from motor impairment. The project was awarded the innovation prize (<http://www.handirect.fr/rubriques/actualite/actualites/defi-2013-decouvrez-laureats,9868.html>).

Responsibilities

Member of the jury of the 2015 edition of the academic finals of the Olympiad for Engineering Sciences, organised with the participation of UPSTI (Union des Professeurs de Sciences et Techniques Industrielles exerçant en CPGE).

Organizing committee of the *Week of the Brain 2015 (La Semaine du Cerveau 2015)*, a weeklong event aimed at vulgarizing research in the neurosciences and computational neurosciences.

Reviewer for Ubicomp adjunct 2014, INTERACT 2015, CHI 2016.

Memberships

ACM (Association for Computing Machinery)

AFIHM (Association Francophone en Interaction Homme Machine)

Technical Skills

Programming C (++) , JAVA, Matlab

Web development HTML/HTML 5, CSS, Javascript, PHP, Flex, ActionScript

IDEs NetBeans, Eclipse, Visual Studio

Databases	MySQL, Oracle
Productivity	MS Office 2007/2011/2014. Apple Productivity Suite
OS	Mac OS X Yosemite, Unix, Linux, Windows (XP, Vista, 7, 10)
Design	Adobe Creative Suite
Brain Computer Interfaces	Emotiv EPOC/emokit, g.Tec USBamp, OpenViBE, EEGLAB, BCILAB
Other Interfaces	Gaze-tracking – Tobii T60

Languages

English	Fluent (Intensive courses in Folkestone, England; University studies in English); Master program was taught in English.
French	Fluent (B2 level obtained in 2012)
Russian	Mother Tongue
Ukrainian	Mother Tongue
German	Formerly B2 level obtained in 2010

Miscellaneous

Horse Riding (licence by the French Horse Riding Federation (*Fédération Française d'Équitation*, FFE))