

# Alexis Devillard

Robotics & AI engineer · PhD researcher

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*Driven by my interest in human-centred technology, I studied mechatronics and AI at Sorbonne Uni. and completed a PhD in human robotics at Imperial College. I have developed interfaces for neurotech companies and research groups internationally. My work focuses on creating state-of-the-art human-machine interfaces.*

## Current positions

**CEO** Mechatronics & Robotics developments consulting 2024 - Ongoing (70%)  
CleverHand, London and open-hardware HMI production and sale

► **Lead electronics engineer** Intramuscular EMG for advanced human machine interfaces  
AxonCtrl, London

► **Mechatronics engineer** Design and development of a multisensorial stress/anxiety  
Lyeons, Cambridge management device for research and commercialisation.

► **Firmware engineer** Surface EMG wearable sensing and haptic feedback for  
Neubond, London rehabilitation.

**Postdoc** Multisensory sensing and feedback interfaces 2024 - Ongoing (30%)  
Imperial College London

## Technical skills

**Programming** C/C++ · Python · PyTorch · TensorFlow · Networking · Assembly · Android (Kotlin)

**Data & ML** Sig. process. · Spatio-temp. extraction · Classification · Regression · CNN/RNN/GAN/VAE

**Mechanical** CAD (SW/Onshape) · 3D printing(FDM/SLA) · Laser cutting · Enclosures & mechanisms

**Electronics** PCB (KiCad) · Microsoldering · Sensor & actuator · firmware · Debugging (oscillo., LA)

**Tools** Git/GitHub · Markdown · LaTeX · Technical diagrams (Mermaid)

## Human interface systems developped

**Prenatal haptic stimulator** 2024 w/ *L. fabrizi @UCL UK*

Device to study sensorymotor development of prenatal infants.

**Nail mounted feedback** 2023 w/ *D. Lau @CUHK HongKong*

Fingernail-mounted vibrotactile display for delivering localised tactile feedback.

**Electronic-skin sensor** 2022 w/ *E. Burdet @IC UK*

The silicone skin sensor to study the mechanisms of objects and textures recognition.

**Wearable EMG for research** 2021 w/ *N. Jarrasse @ISIR France*

A modular and wearable high density EMG bracelet for affordable research.

**APB muscle EMG recording** 2021 w/ *C. Mehring @Freiburg Univ.*

Device to study motor unit EMG decomposition for abductor pollicis brevis.

**Actuated Rubber Hand exp.** 2020 w/ *T. Brouillet @Nanterre Univ.*

Actuated version of the rubber hand exp. to study the role of agency in embodiment.

**Robot assisted prostate biopsy** 2020 w/ *M.A. Vitrani @ISIR France*

Device to study motion strategies of a robotic probe constrained by variable stiffness

**Mini spot** 2020

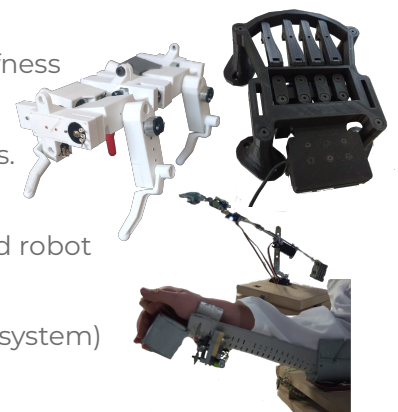
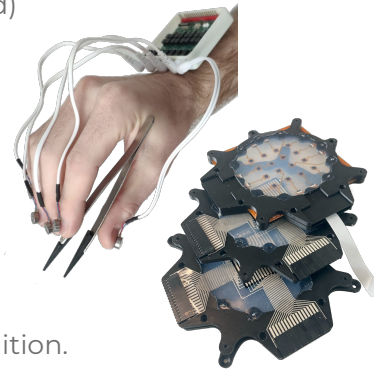
A centimetres long robot dog with 12 DoF to test balancing and gaits algorithms.

**Bipedal exoskeleton** 2015

A passive exoskeleton to study walking motion and reproduced it on small biped robot

**Tele operated arm** 2013

A tele-operated arm from metal scraps, servos (One of my first human interface system)



Education

<b>PhD studies</b> Bioengineering	<b>Imperial College London, UK</b> Multisensory search engine (haptics, audio, vision)	2020 - 2024
<b>Master degree</b> AI	<b>Sorbonne Université, Paris, France</b> Artificial Intelligence and Multi-agent Systems	2018 - 2019
<b>Master degree</b> Robotics	<b>Polytech - Sorbonne Université, Paris, France</b> Mechatronics, Mechanics, Electronics, Dynamics Control, IT, CAD	2016 - 2019
<b>Languages</b>	French (native), English (advanced), Mandarin (beginner), German (beginner)	

Experience

<b>Teaching assistant</b> Imperial College London	Human centered assistive and rehabilitation design.	2021 - 2024
<b>Research engineer</b> ISIR, Sorbonne Univ.	· Convertible flying drone control with PX4 software architecture. · Stewart platform control with CANopen bus.	2019 - 2020
<b>Internship</b> TNE, EPFL, Switzerland	Creation of realtime biosignal data acquisition environment.	2021 - 2024
<b>Research engineer</b> ISIR, Sorbonne Univ.	Development of a wearable EMG interface. It can stream up to 80 dry channels at 2kHz with 12bit of resolution via WiFi or ethernet.	2019 - 2020
<b>Internship</b> VideoLAN, France	Implemented classification and compression algorithms (k-means, VLADs, PCA, product quantization) a "shazam" for video recognition.	2018
<b>President</b> Student Robotic club	· Managed projects, teams & resources. · Created partnerships with banks and companies.	2018 - 2019
<b>Designer</b> Delépine, Philippines	Design of the electronics of solar panel-bag and a children size "jeepney", a typical bus of the Philippines. organization.	2017
<b>Teaching</b> Paris	Teaching robotics, mathematics, physics to primary school children.	2015 - 2020
<b>Technician</b> ROMP, Ecuador	Associative Internships at ROMP Global a prosthesis & orthosis organization. Managed prosthesis 3D printing.	2015

Publications

<b>The Identification of Haptic Invariants in Humans and Their Applications to Robotics</b>		
H. Jörntell, A. Devillard, E. Burdet	Multisensory Research	2025
<b>Embodied Tactile Perception of Soft Objects Properties</b>		
A. Dutta, A.W.M. Devillard, Z. Zhang, X. Cheng, E. Burdet		2025
<b>Modular, Multi-Layer e-Skin for Robotics Investigations and Applications</b>		
A.W.M. Devillard, A. Dutta, Z. Zhang, X. Cheng, M. Kaboli, E. Burdet	WHC	2025
<b>Tactile, Audio, and Visual Dataset During Bare Finger Interaction with Textured Surfaces</b>		
A.WM Devillard, A. Ramasamy, X. Cheng, D. Faux, E. Burdet	(Nature) Scientific Data,	2025
<b>Design and Evaluation of a Modular Robotic System for Microsurgery</b>		
J.T. Molina, T. AbuBaker, Y. Huang, X. Cheng, A. Devillard, E. Burdet	IEEE ICRA	2024
<b>Concurrent haptic, audio, visual dataset during bare finger interaction with textured surfaces</b>		
A. Devillard, A. Ramasamy, D. Faux, V. Hayward, E. Burdet	IEEE WHC	2023

Award & Presentations

<b>Workshop</b>	ICRA	Presented extranumery limb robotic backpack	2024	Yokohama, Jp
<b>Workshop</b>	INTUITIVE	Organised projects about neuro-perception devices	2022	Valletta, Malta
<b>Grant</b>	EPSRC	Accepted grant proposal about human augmentation	2022	London, UK
<b>Workshop</b>	COST	Organised projects about wearable devices	2021	Madrid, Spain
<b>Fellowship</b>	Marie Skłodowska-Curie	EU Network on multisensory perception	2020	London, UK
<b>Competition</b>	Cybatlon	International competition in ISIR's team	2020	Paris, France