

MICROELECTROMECHANICAL SYSTEMS & MICROSYSTEMS

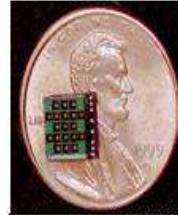
BỘ MÔN VI CƠ ĐIỆN TỬ VÀ VI HỆ THỐNG

University of Engineering and Technology
Vietnam National University, Hanoi
OFFICE: 706E3, TEL. 024-3754-7709

8/17/2022

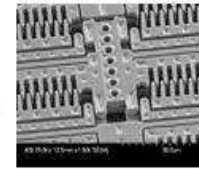
What are MEMS?

- **Micro**(small)



http://eod.gsfc.nasa.gov/062/SA_MEMs.htm

- **Electro**(electric components/functionality)



<http://www.memx.com/>

- **Mechanical**(mechanical components/functionality)



<http://www.memx.com/>

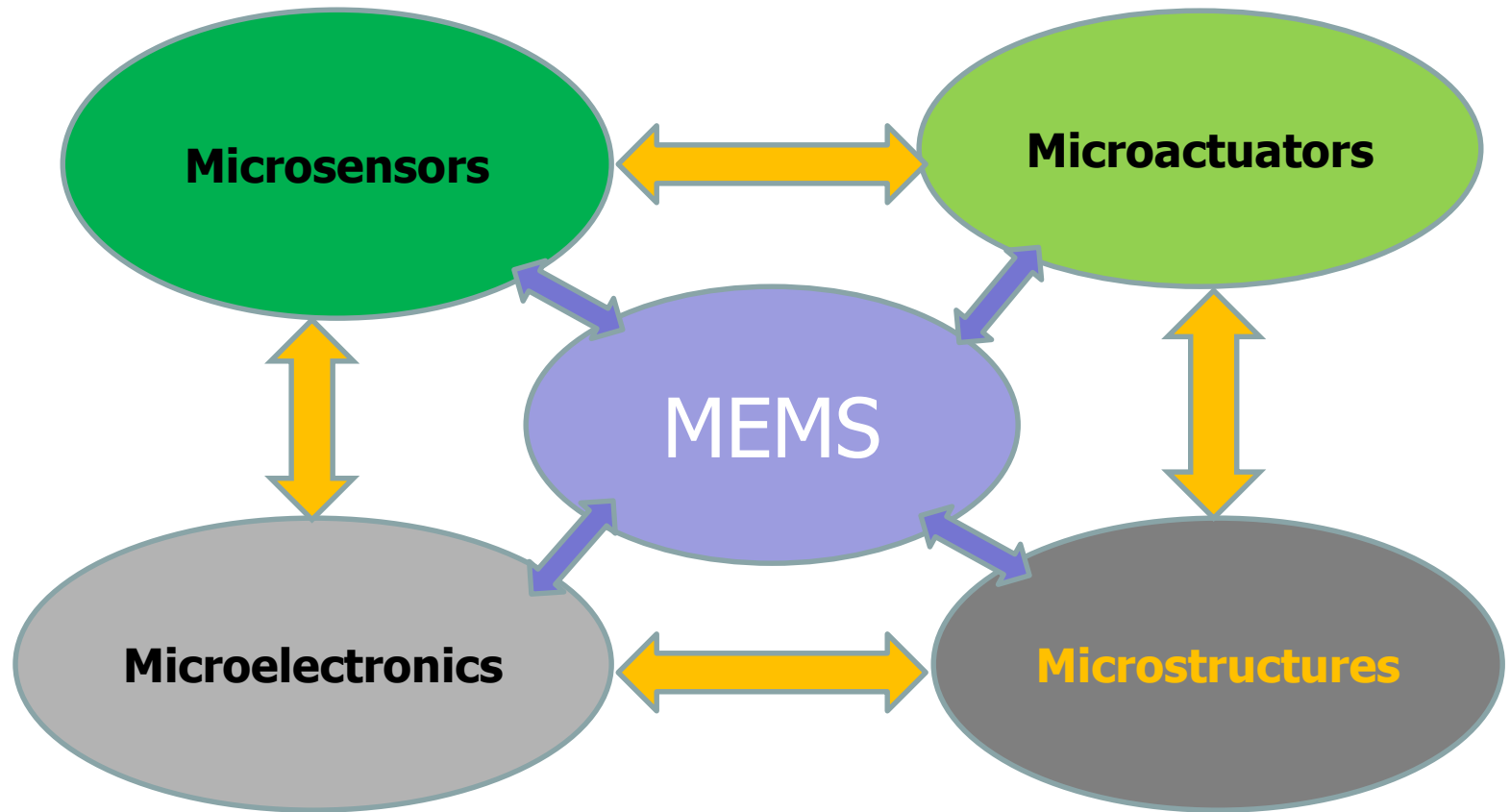
- **Systems**(integrated, system-like functionality)



http://www.forbes.com/2008/04/22/mems-apple-nintendo_leadership_clayton_in_jw_0421claytonchristensen_sl_slide.html

8/17/2022

MEMS gồm những lĩnh vực gì?



8/17/2022

MEMS lab. Staffs

No	Name	Research fields
1	Prof. Dr. Chu Duc Trinh	Piezoresistive sensing; Polymeric actuating; Microfluidic and bioMEMS; Medical electronics; Robotics, Automation and Control
2	Assoc.Prof. Dr. Bui Thanh Tung	MEMS sensors and actuators, BioMEMS, Microfluidic, CNT, Medical electronics, Automation and Control.
3	Assoc.Prof. Mai Anh Tuan	Biosensor, BioMEMS
4	Dr. Nguyen Ngoc An	Non-Destructive Testing/Evaluation/Inspection; Ultrasonic; Microfluidic, Automation and Control
5	Dr. Luu Manh Ha	Biomedical Signal processing
6	Dr. Nguyen Dang Phu	MEMS sensors and actuators, BioMEMS
7	Dr. Phạm Ngọc Thảo	MEMS Design; Microfluidic; Electronic Design and Applications
8	MSC. Trần Như Chí	Electronic devices, MEMS sensor
	Phạm Xuân Lộc	Biomedical Signal processing
9	HVCH. Nguyễn Như Cường	FEM, microfluidic
10	HVCH. Phan Hoàng Anh	Automation and Robotics

Research in MEMS group

Fundamental research

- Sensing actuator/Polymeric microactuator
- Design and fabrication of the microaccelerometer, gyroscope
- Microfluidic and microinkjet
- Cancer cell detection
- DSP for Ultrasound Imaging, for Magnetic resonance imaging, for Integration of the INS and GPS, for Communication

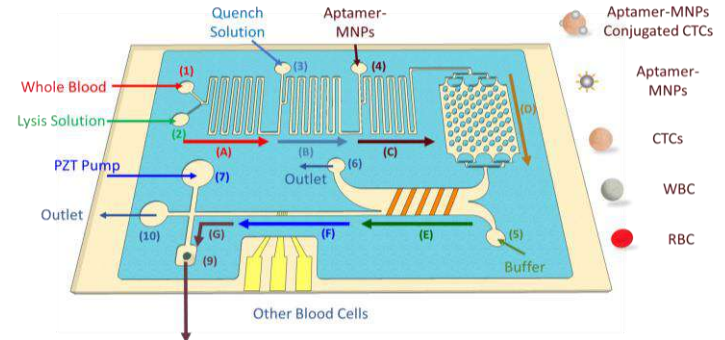
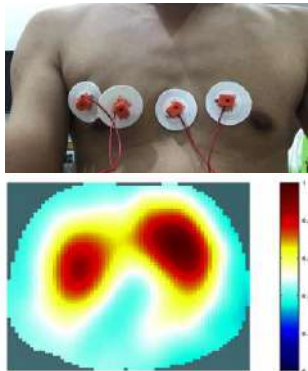
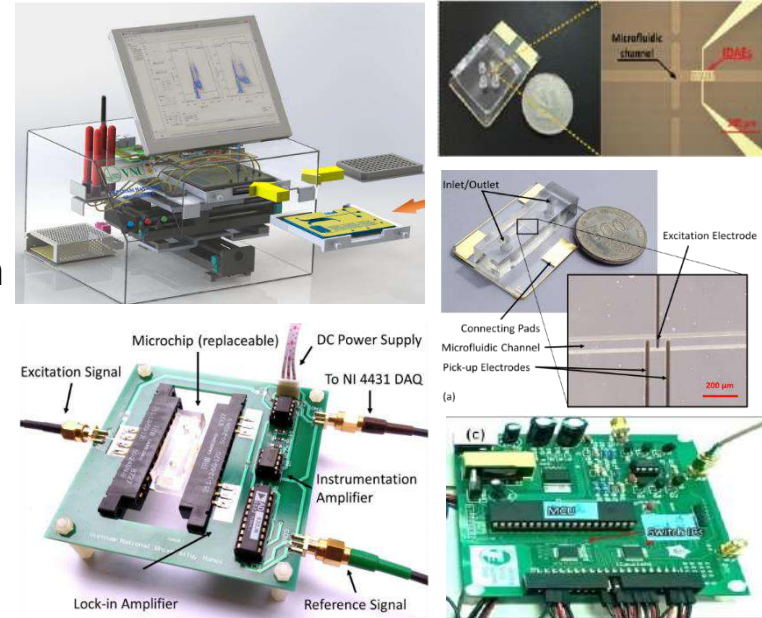
Application

- Patient monitor system
- Agriculture
- Inertial/GPS navigation system
- Industrial Electronic Systems
- Sensor Network
- Robotics
- ...

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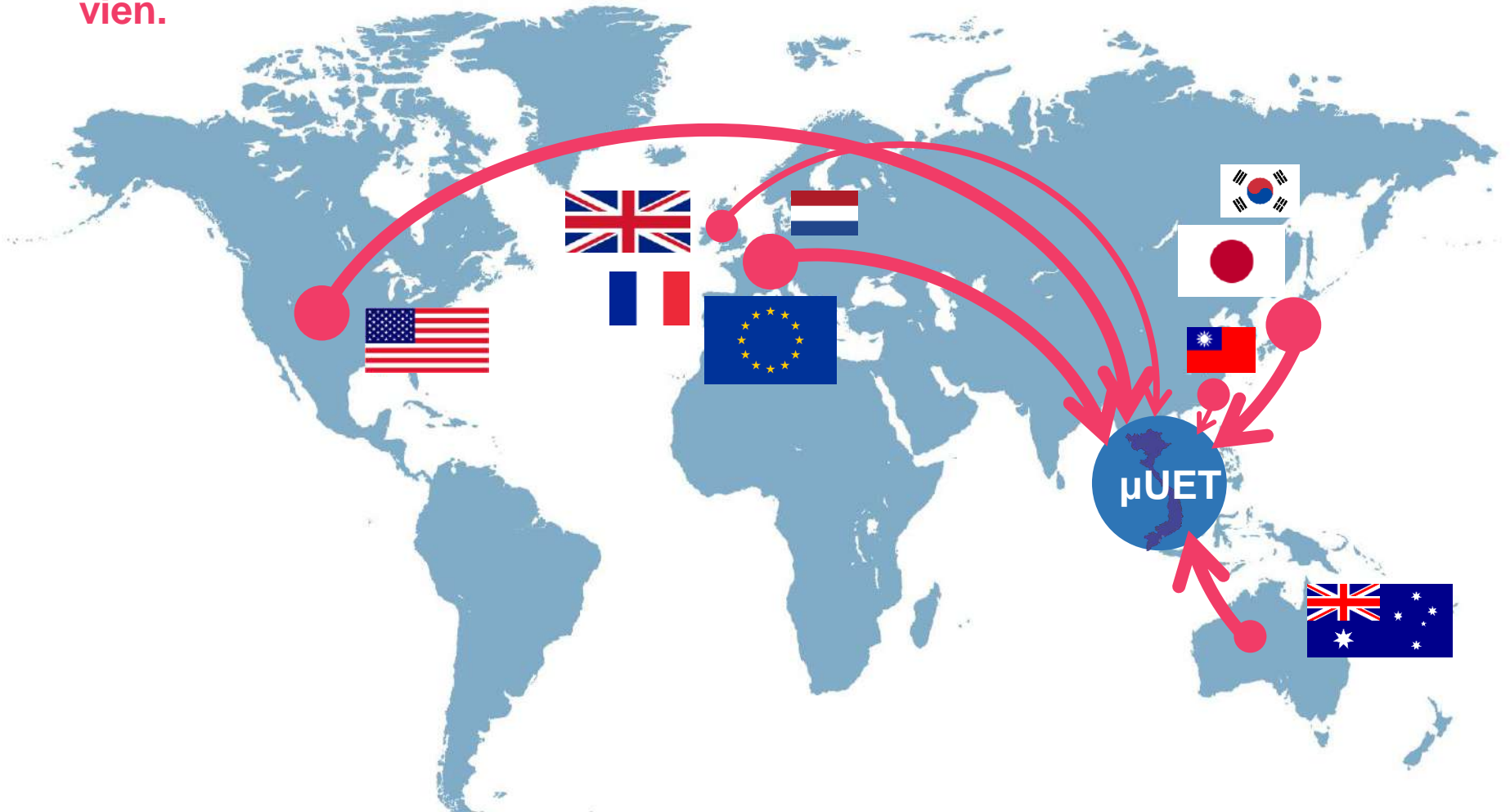
Ongoing Projects

- Study on BioMems based diagnosis systems
 - NSE protein concentration and detection
 - Chip based for rare cancer cell detection
- Development of EIT (Electrical Impedance Tomography) system
- Development of wound healing techniques using spray gun and bio-nanomembranes
- Development of an automatic pick-n-place system for industrial manufacturing



HỢP TÁC QUỐC TẾ ĐA DẠNG

Nghiên cứu nền tảng để phát triển khoa học. Bộ môn Vi cơ điện tử luôn chú trọng đến hợp tác nghiên cứu với nhiều trường đại học, viện nghiên cứu trong và ngoài nước để nâng cao năng lực cán bộ và tạo **cơ hội giao lưu quốc tế cho sinh viên.**

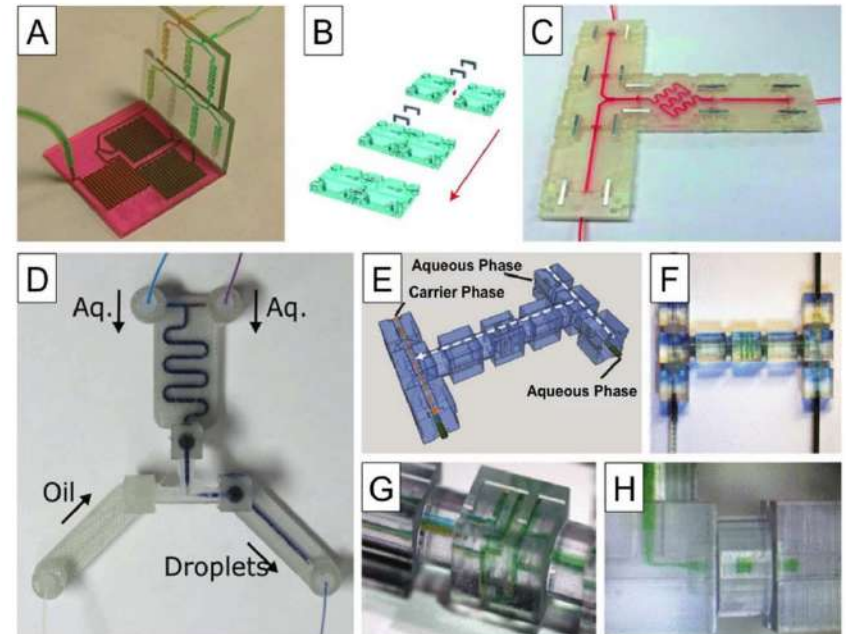
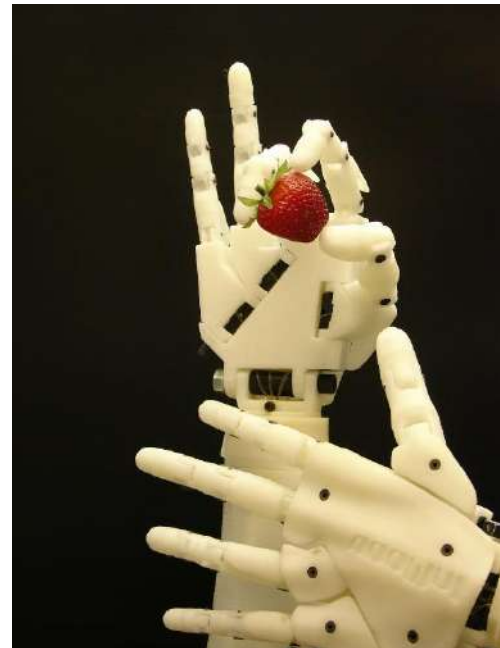
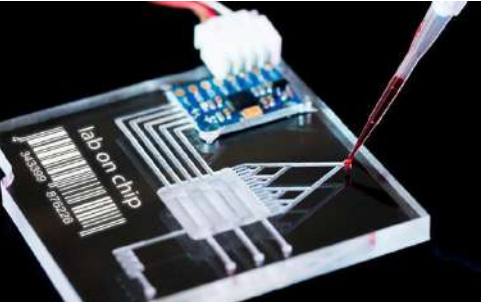


Student Doing Scientific Research Contest

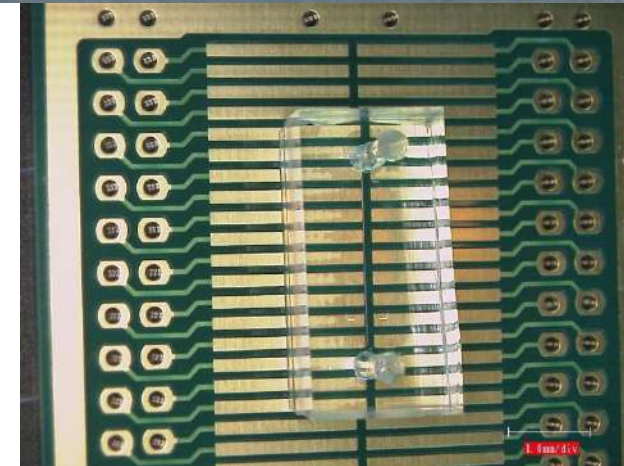
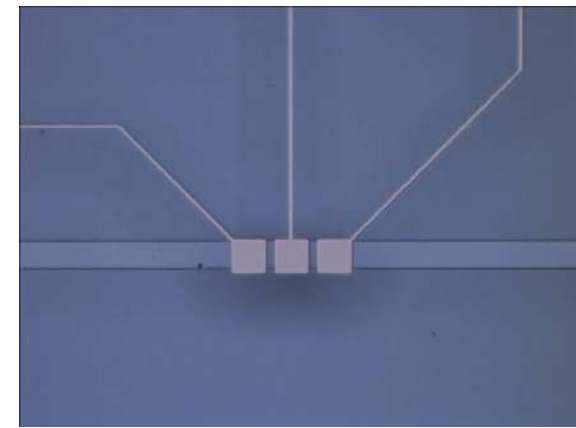
Year	Prize	Topic	Supervisor
2019	3 rd prize VNU	Object following robot based on multi-sensor integrated intelligent mobile robot platform	Asoc. Pro. C.D. Trinh
2018	3 rd prize VNU	Motor safe	Asoc.Prof. T.D.Tan
2017	1 rd prize VNU	Fluidic chip for cancer cell detection	Asoc. Pro. C.D. Trinh, Dr. B.T.Tung
2017	1 rd prize UET	Tilt sensor	Dr. B.T.Tung
2017	2 nd prize UET	Step counter	Prof. T.D.Tan
2016	3 rd prize VNU	Animal behavior monitoring	
2016	2 nd prize UET	ECG signal analysis	
...	
2006	1 st prize MOED	Patient monitoring system	



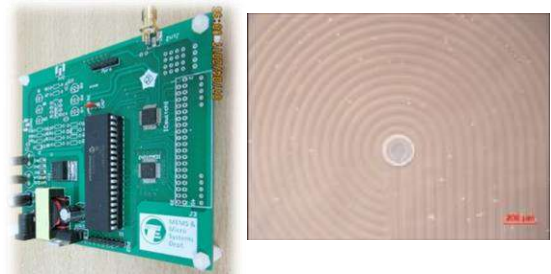
Cơ sở Vật chất



Microfluidic chip

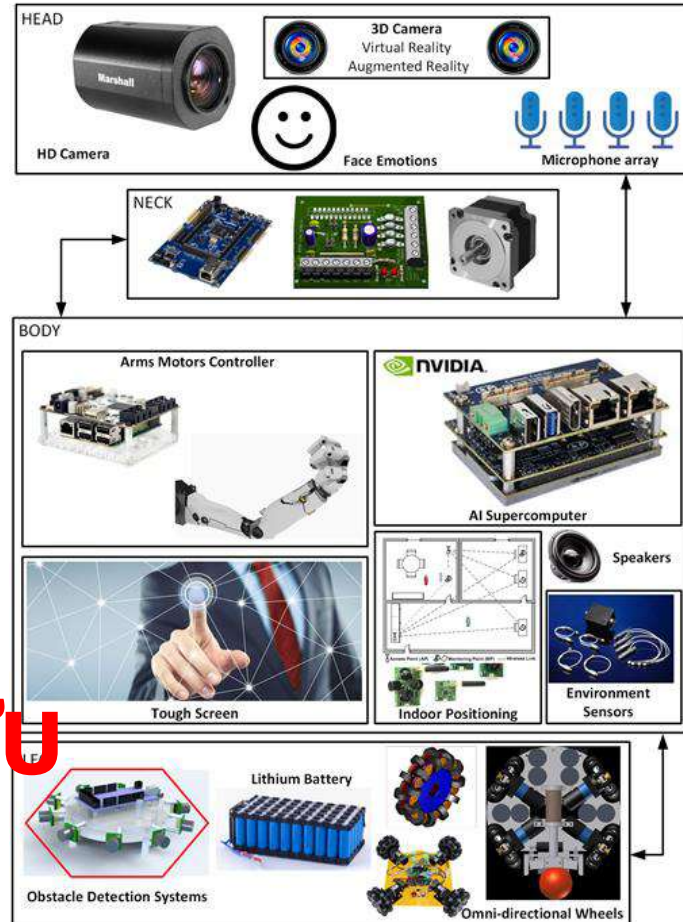


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Chip vi lưu

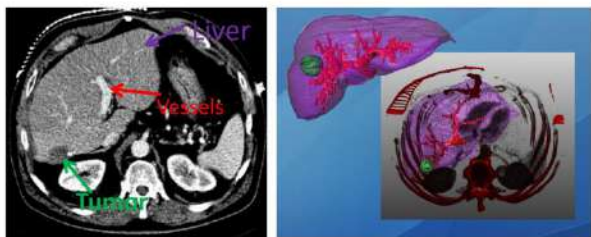
Điều khiển tập trung tế bào sống cho xét nghiệm y sinh



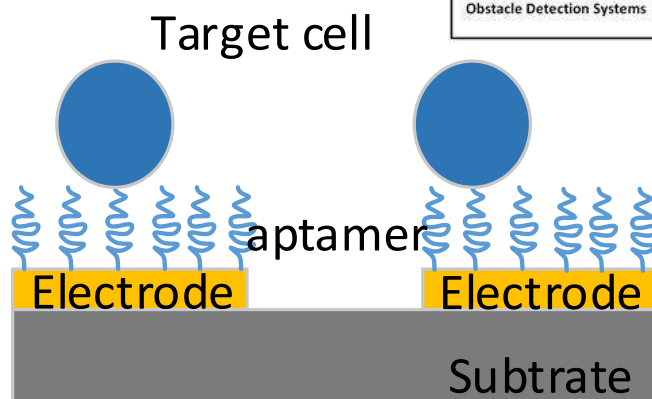
MỘT SỐ NGHIÊN CỨU



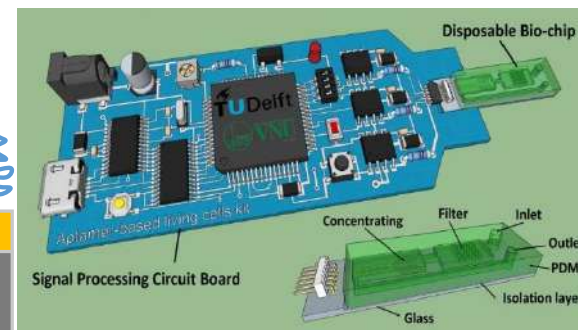
Hệ thống giám sát trượt lở đất.



Xử lý ảnh y sinh

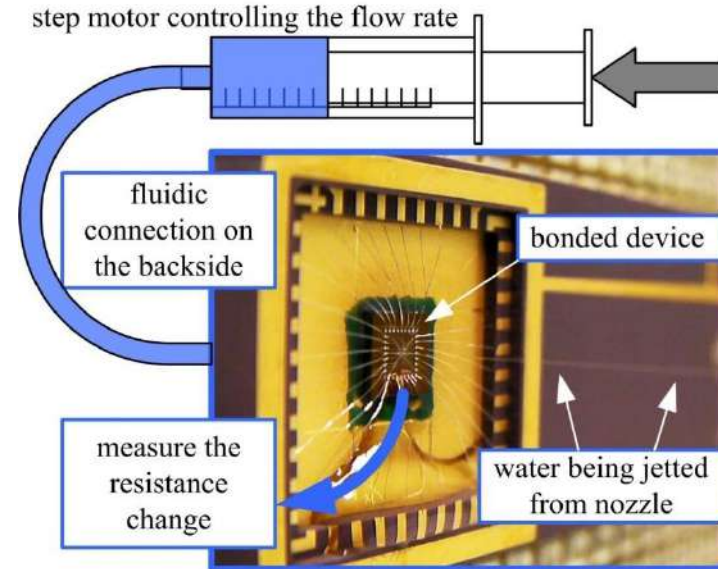
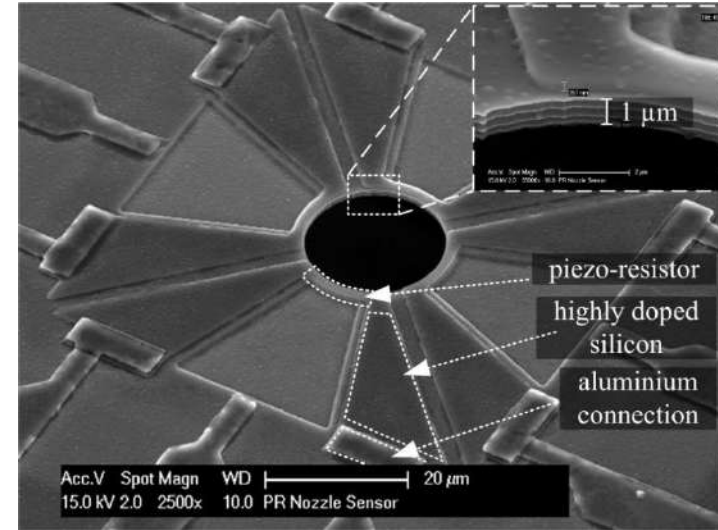
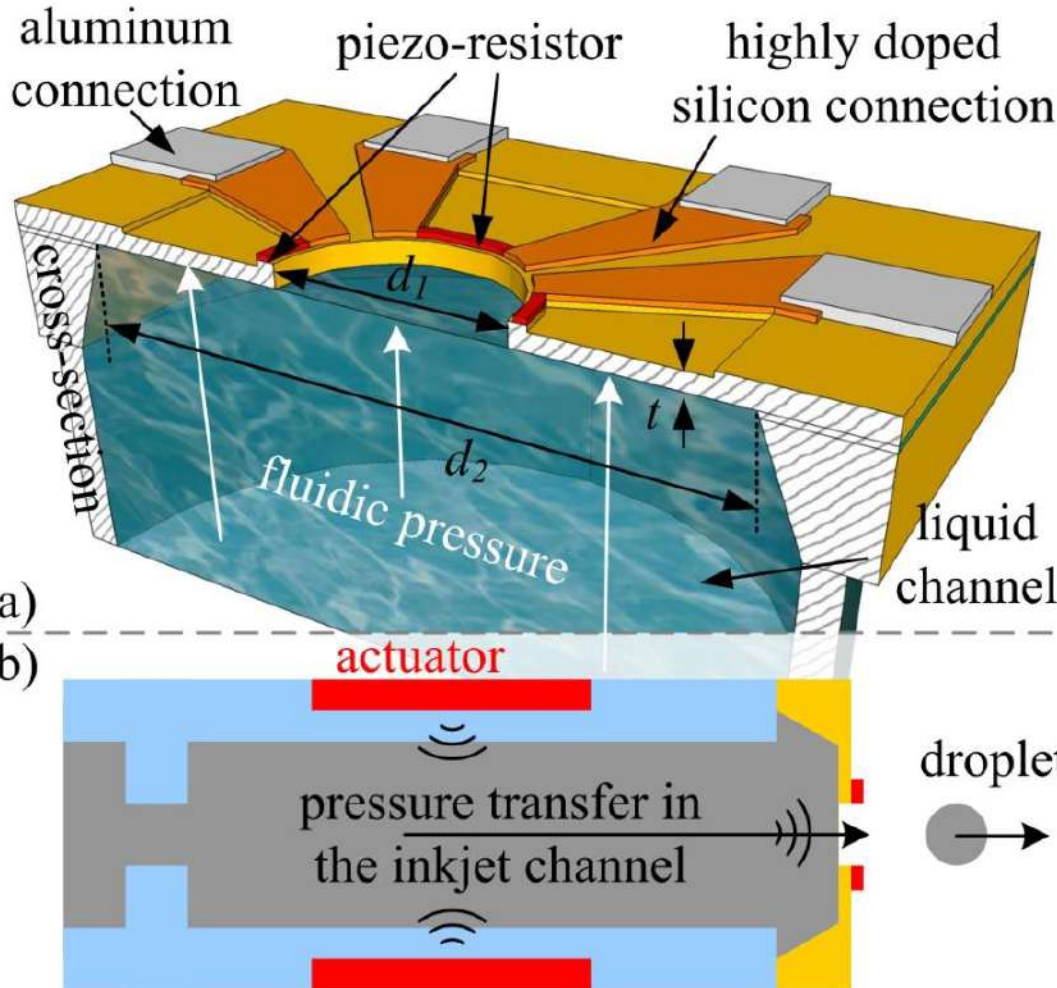


Cảm biến phát hiện tế bào ung thư



MEMS RESEARCH

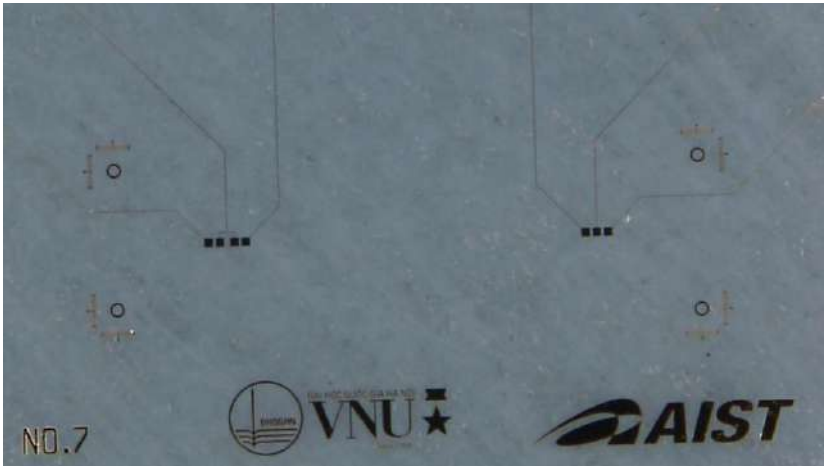
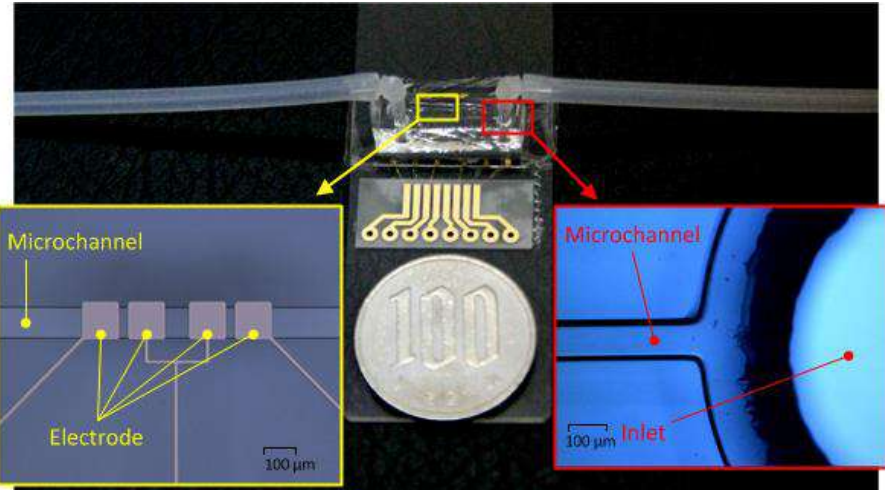
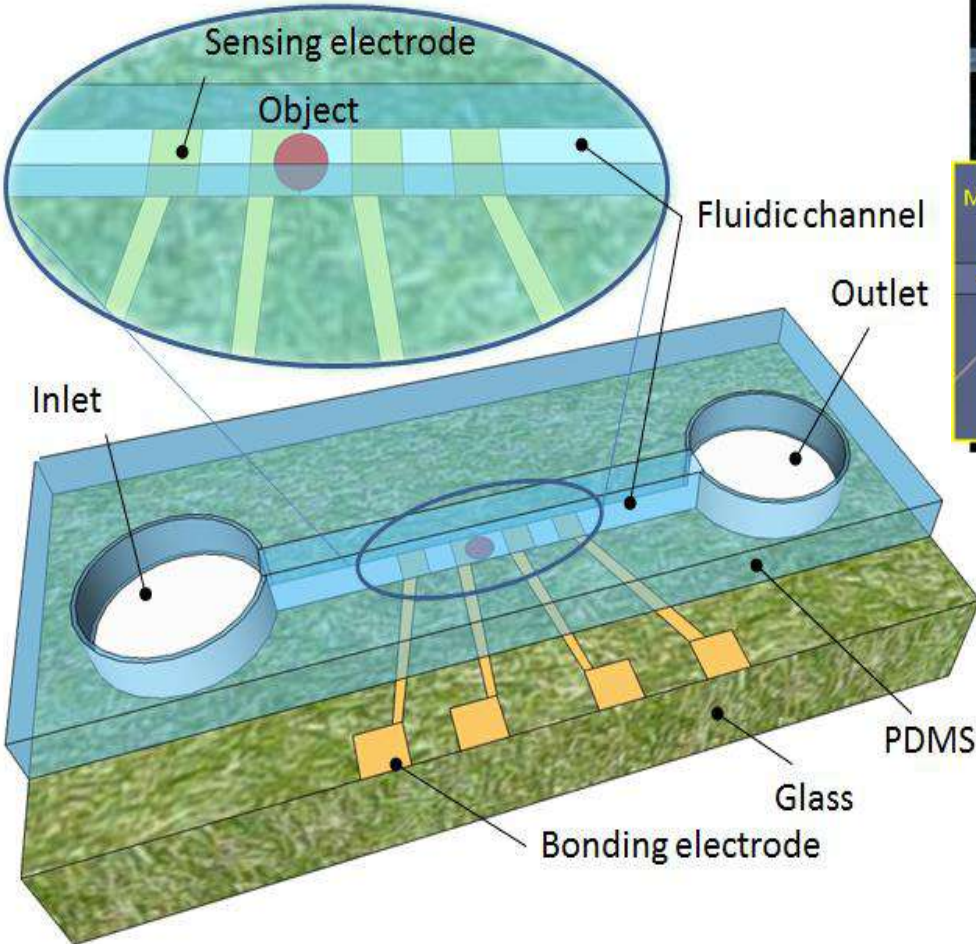
Sensing Inkjet



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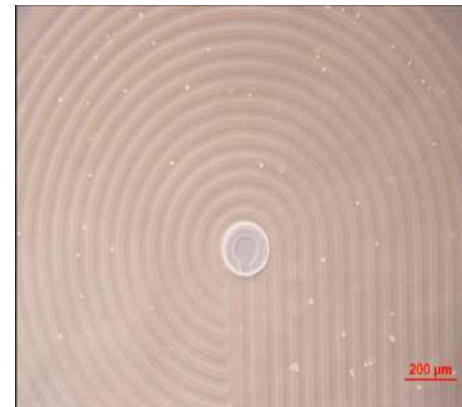
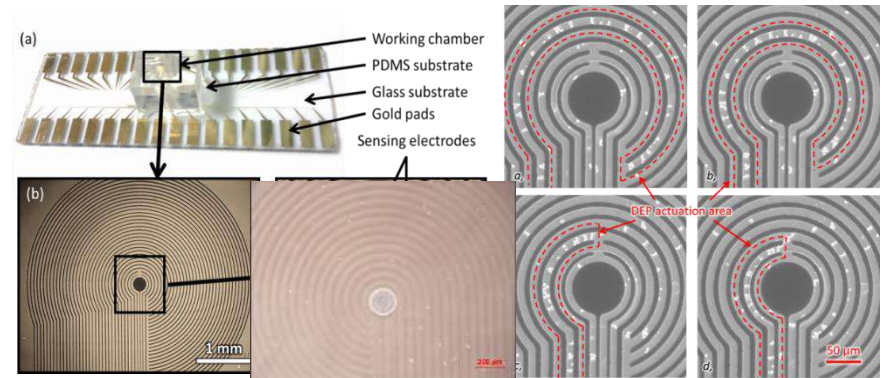
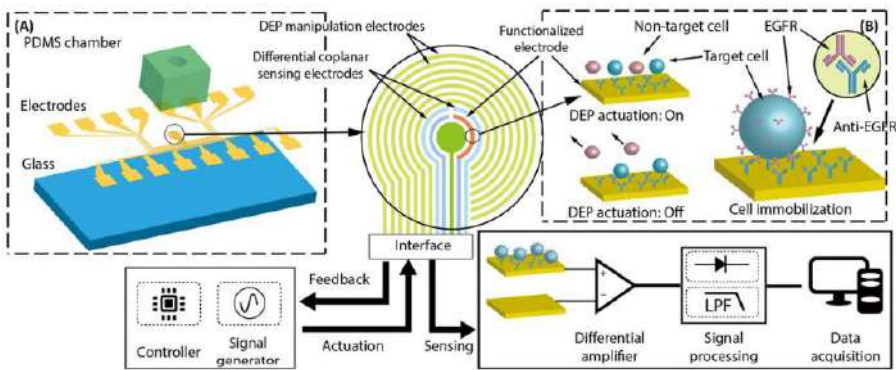
Collaborated with DIMES, TUDelft, The Netherlands

Microfluidic chip



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Preconcentration and detection of Tumor Cell

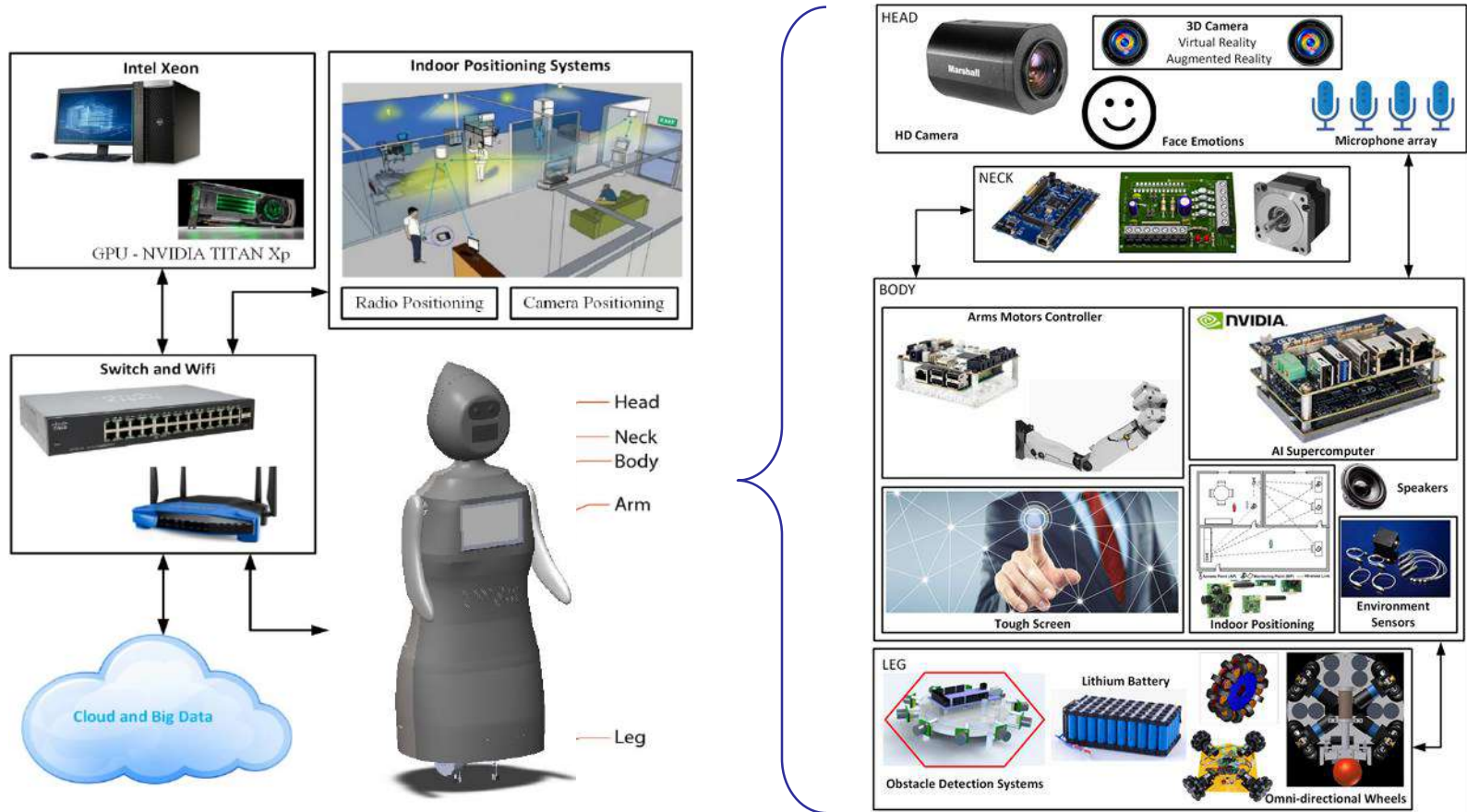


Trải nghiệm sinh viên khi vào Bộ Môn MEMS



Sinh viên tham gia nghiên cứu lắp đặt hệ thống tay gấp cho Công ty MCNEX

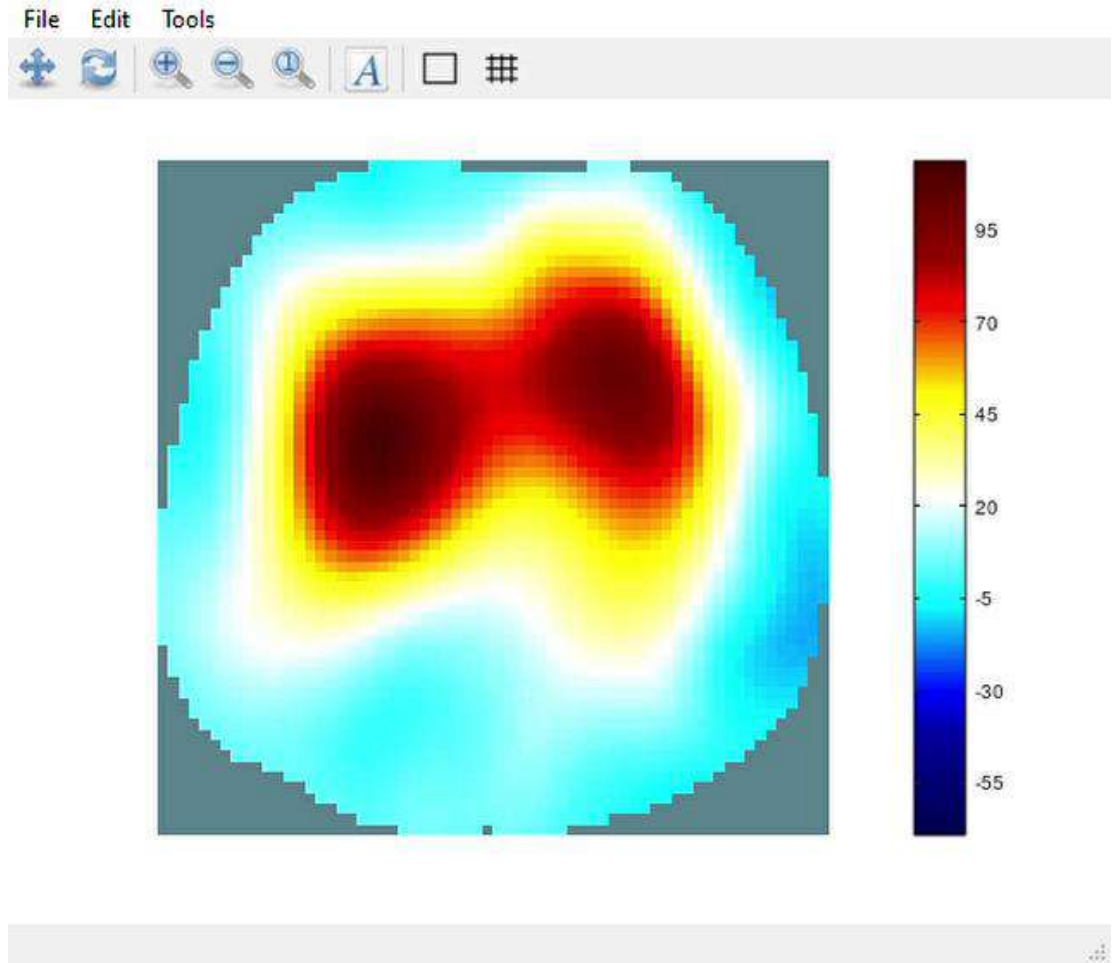
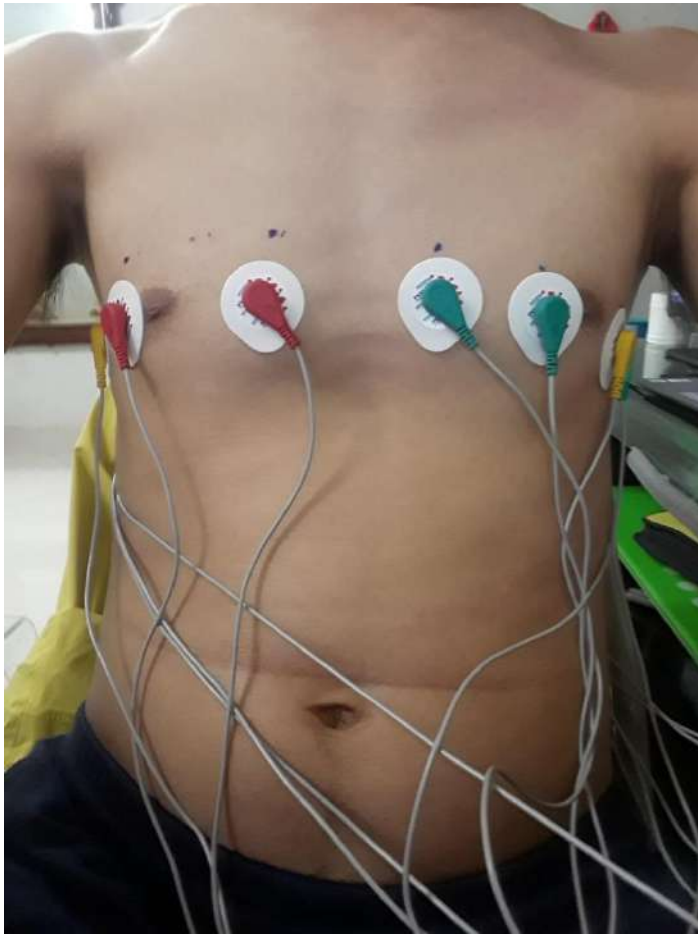
Trải nghiệm sinh viên khi vào BỘ Môn MEMS



Sinh viên tham ra nghiên cứu Robot nhắc đeo khẩu trang trong đợt dịch covid 2019

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Trải nghiệm sinh viên khi vào Bộ Môn MEMS



Sinh viên nghiên cứu hệ thống cắt lớp trở kháng lồng ngực

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PHÒNG 706 NHÀ E3



BỘ MÔN VI CƠ ĐIỆN TỬ VÀ VI HỆ THỐNG MEMS WELCOMES YOU!

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