



French-Canadian biomedical engineering

Summer School, Bio-Hackathon and research workshop

Paris, Compiègne, June 18-22 2018

Venue:

Monday, Tuesday, Thursday and Friday (June 18, 19, 21 and 22):

**Astier Amphitheater, Sorbonne Université
Campus Pierre and Marie Curie,
4 Place Jussieu, 75005 Paris, Esclangon building**

Wednesday, June 20 :

**Université de Technologie de Compiègne (UTC),
66, Avenue de Landshut, 60200 Compiègne**

Synthetic program

Days	Morning	Afternoon		Evening	
Monday	Presentations of the involved institutions and all students internships	Presentations of bio-hackathon medical domains, needs finding and issues		Bio-Hackathon	
Tuesday	Courses on strategy, design and prototyping	Courses on entrepreneurship and ethical issues		Bio-Hackathon	
Wednesday (UTC, Compiègne)	Courses on interaction design and standards, flash presentations of all students internships	French and Canadian start-ups presentations, visits of laboratories		Return to Paris	
Thursday (research workshop)	Research activities on biomedical imaging, biomechanics and bioengineering	Lab. visits	Laboratory visits, research activities on E-Health, Bio-sensors, Devices and System Design, Biological systems, Biomaterials and Computational Biology	Bio-Hackathon	Cocktail reception at Zamanski tower of SU, Panoramic view of Paris
Friday	Presentations of French and Canadian startups, Tremplin Carnot Interfaces, Canadian incubator Velocity associated to UW and SATT Lutech	Bio-Hackathon teams results, round table, awards for best teams and closing			

Monday, June 18

Venue:

**Sorbonne Université Campus Pierre and Marie Curie,
4 Place Jussieu, 75005 Paris, Esclangon building
Astier Amphitheater**

Monday, June 18, Morning Session		
<i>Presentations of the involved institutions and all students internships</i>		
Time	Theme	Presenter
8:00 – 8:30	Registration and Welcome coffee	
8:30 – 8:45	Welcome words of the International Relations of SU	Serge FDIDA (SU)
8:45 – 9:00	Presentation of Engineering department of SU and Eng. Master	Emmanuelle ENCRENAZ (SU) and Bruno GAS (SU)
9:00 – 9:15	Welcome words and presentation of CELSA information and communication school of SU	Karine BERTHELOT-GUIET (CELSA)
9:15 – 9:30	University of Waterloo (UW) and Centre for Bioengineering and Biotechnology (CBB)	Maud GORBET (UW)
9:30 – 10:00	Welcome words and presentation of "Université de Technologie de Compiègne" (UTC)	Cornélia MARIN (UTC)
10:00 – 10:15	UTC-SU-UW BIOMEDInnov program	Sofiane BOUDAOU (UTC), Hamid KOKABI (SU), Juliette CHARBONNEAUX (CELSA), Maud GORBET (UW)
10:15 – 10:35	Coffee break	
10:35– 13:00	Presentation of all UW, SU and UTC students internships at different laboratories	5mn flash presentations and 2mn of questions
13:00– 14:00	Lunch at Atrium Hall Internships poster presentations	

Monday, June 18, Afternoon Session

Presentations of bio-hackathon medical domains, needs finding and issues

Time	Theme	Presenter
14:00 – 14:20	Presentation of Bio-Hackathon domain, French-Canadian students teams and guidelines	Maud GORBET (UW), Jennifer BOGER (UW) and Tom WILLETT (UW)
14:20 – 14:40	Welcome words, Presentation of MEDTRONIC activities	Yves MOREL MEDTRONIC
14:40 – 15:10	Cardiovascular diseases	Dr. Jean-Michel DAVAINÉ and Dr. Thibault COUTURE Vascular surgery department (head : Prof. Fabien KOSKAS) at university hospital, Pitié Salpêtrière, APHP
15:10 – 15:40	Percutaneous valves	Prof. Pascal LEPRINCE, head of heart surgery department at Cardiology Institute, university hospital, Pitié Salpêtrière, APHP
15:40 – 16:00	Cardiac Assistance systems	Mourad KAROUIA, ADICARE, Cardiology Institute
16:00 – 16:20	Coffee break	
16:20 – 16:50	Functional Decline with Aging	Dr. Kiyoka KINUGAWA-BOURRON, Pitié-Salpêtrière – Charles-Foix, APHP
16:50-17:10	Gerontechnology and innovations for care and cure : new design and evaluation challenges in the digital coming revolution	Gérard CORNET, Expert CE
17:10 – 17:50	Needs finding and identifying real problems	Maud GORBET (UW) and Tom WILLETT (UW)
17:50 – 18:10	Coffee break	
18:10– 18:30	Presentation of French-Canadian students teams initial ideas and questions	Students team leaders
18:30– 20:00	French-Canadian students teams working Extra rooms with materials and softwares : 104 and 108 Esclançon, 1st floor	

Tuesday, June 19

Venue:

**Sorbonne Université Campus Pierre and Marie Curie,
4 Place Jussieu, 75005 Paris, Esclangon building
Astier Amphitheater**

Tuesday, June 19, Morning Session		
<i>Courses on strategy, design and prototyping</i>		
Time	Theme	Presenter
9:30 – 10:30	Strategy presentation	Yves MOREL, MEDTRONIC
10:30 – 10:45	Coffee break	
10:45 – 11:30	User testing - Goldilocks prototyping; Mini google sprints	Maud GORBET (UW), Tom WILLETT (UW) and Catherine BURNS (UW)
11:30 – 12:15	Development of new products, challenges and Design, part I	Yves BAYON, MEDTRONIC
12:15– 14:00	Lunch at Atrium Hall Internships poster presentations	

Tuesday, June 19, Afternoon Session		
<i>Courses on entrepreneurship and ethical issues</i>		
Time	Theme	Presenter
14:00 – 14:45	Development of new products, challenges and Design, part II	Yves BAYON, MEDTRONIC
14:45 – 15:30	Ethical issues in biomedical engineering	Jennifer BOGER (UW)
15:30– 16:00	Coffee break Bio-Hackathon teams discussions	
16:00– 20:00	French-Canadian students teams working (mentoring: UTC-SU-UW- MEDTRONIC) Extra rooms with materials and softwares : 104 and 108 Esclangon, 1st floor	

Wednesday, June 20

Venue : Centre d'Innovation
 Université de Technologie de Compiègne (UTC),
 66, Avenue de Landshut, 60200 Compiègne

Group departure by bus to Compiègne at 7h30 from Jussieu Campus

Wednesday, June 20, Morning Session

*Courses on interaction design and standards,
 flash presentations of all students internships*

Time	Theme	Presenter	Room
9h00 - 9h30	Welcome words	O. Gapenne	AMPHI CI
9h30 – 10h30	UTC Partnership/ IHS presentation	Antoine GROHEUX, MEDTRONIC	AMPHI CI
10h30 – 11h45	Interaction design	A. GUENAND (UTC)	AMPHI CI
11h45 - 13h00	Standards for biomedical device	J.M. PROT (UTC)	AMPHI CI
13h00 - 15h00	Lunch and internships posters presentation	5mn flash presentations	ATRIUM

Wednesday, June 20, Afternoon Session

French and Canadian start-ups presentations, visits of laboratories

Time	Theme	Presenter	Room
15h00 – 16h30	<i>Start-ups presentation:</i> <i>Medella</i> <i>Equisense</i> <i>Healsy</i>	H. GANDY and M. BAIG (Medella) C. SAUTE (Equisense) N. CALECA (Healsy)	AMPHI CI
16h30 – 17h20	<i>Visits</i> <ul style="list-style-type: none"> • <i>Posters (Atrium et ShowRoom)</i> • <i>eBioMed platform</i> • <i>SyNeMus platform</i> • <i>Coffee Break</i> 		ATRIUM, 1 st floor, 2 nd floor

Group departure by bus from Compiègne to Paris at 17h30

Thursday, June 21

Venue:

**Sorbonne Université Campus Pierre and Marie Curie,
4 Place Jussieu, 75005 Paris, Esclangon building
Astier Amphitheater**

Thursday, June 21, Morning Sessions :		
<i>Research activities on biomedical imaging, biomechanics and bioengineering</i>		
Parallel session of IEEE System of Systems Engineering Conference (SoSE) 2018, 10h30-12h30		
SoS approach for Ambient Assisted Living and vital Telemonitoring Workshop		
Time	Theme	Presenter
8:00 – 8:30	Registration and Welcome coffee	
8:30 – 9:00	Engineering Research and Teaching department of SU, Research director of UTC and Centre for Bioengineering and Biotechnology (CBB) at UW	Emmanuelle ENCRENAZ (SU), Marie Christine HO BATHO (UTC) Catherine BURNS (UW)
Session 1:	Biomedical imaging and biomechanics	
9:00 – 9:15	Quantification ultrasonic Imaging to assess tumor status	Lori BRIDAL (SU), Alain CORON (SU), Jérôme GRIFFON (SU)
9:15 – 9:30	Biomarkers for Imaging Cardiovascular Aging	Nadjia KACHENOURA (SU)
9:30 – 9:45	Knowledge extraction from medical imaging for Patient Specific Musculoskeletal Modelling	Marie Christine HO BATHO (UTC), T.T. DAO (UTC)
9:45 – 10:15	Coffee break	
Session 2:	Biomechanics and bioengineering	
10:15– 10:30	Safepregnancy@home	Catherine MARQUE (UTC) and Dan ISTRATE (UTC)
10:30– 10:45	Joint project UW/d'Alembert Institute (SU) in fluid mechanics	Stephane ZALESKI (SU)
10:45– 11:00	Evaluation of aging effects on muscle efficiency during isometric contractions of upper and down limbs using HD-SEMG technique (UTC/WU).	Sofiane BOUDAUD (UTC), Ning JIANG (UW)
11:00 – 11:15	1D models of blood flow in arterial networks: a decision tool for surgery	Pierre-Yves LAGREE (SU)
11:15 – 11:30	Unraveling the invisible causes of bone fragility	Tom WILLETT (UW)
11:30 – 11:45	CHRONOS EU project, BMBI-SU-AP-HP Assessment of motor functional age	Kiyoka KINUGAWA (SU) Sofiane BOUDAUD (UTC)
11:45– 12:00	Gesture Control with Single-element Ultrasound signals: a comparison with single-channel surface Electromyogram	Ning JIANG (UW)
12:00 – 13:30	Lunch at Atrium Hall Internships poster presentations	

Thursday, June 21, Afternoon sessions :

Laboratory visits, research activities on E-Health, Bio-sensors, Devices and System Design, Biological systems, Biomaterials and Computational Biology

Time	Theme	Presenter
13:30 – 14:30	Laboratory visits	ISIR - AGATHE (Guillaume MOREL), LIP6-SYEL (Bertrand GRANADO), L2E (Julien SARRAZIN, Yves CHATELON)
Session 3 :	E-Health, Bio-sensors, Devices and System Design	
14:45 – 15:00	Ventilator Mode Nomenclature (WU/UTC)	Catherine BURNS (UW) Isabelle CLAUDE (UTC)
15:00 – 15:15	A low-power Spectrum-Sensing device for monitoring RF-EMF exposure of newborns	Hassan ABOUSHADY (SU)
15:15 – 15:30	Glycemia measurement using RF (UW/UTC)	George SHAKER (UW) and Dan ISTRATE (UTC)
15:30 – 15:45	Non-Contact estimation at 60 GHz for human vital signs monitoring (UTC/SU/UW project)	Julien SARAZIN (SU), Guido VALERIO (SU) and Dan ISTRATE (UTC)
15:45 – 16:00	Biomedical activities at LIP6, SYEL team	Bertrand GRANADO (SU)
16:00– 16:15	Study of a NFC patch for medical monitoring	Madjda BOUKLACHI, Antoine DIET, Marc BIANCHERI-ASTIER, Yann LE BIHAN (SU, GeePs)
16:15– 16:45	Coffee break	
Session 4 :	Biological systems, Biomaterials and Computational Biology	
16:45– 17:00	Joint project with UTC and BMBI in platelet functional tests (UTC/UW)	Maud GORBET (UW) and Anne LE GOFF (UTC)
17:00– 17:15	Interacting by contact: from residues to networks of molecular interaction"	Alessandra CARBONE (SU)
17:15– 17:30	LoC for magnetic immunoassay	Guillaume PERRY (SU)
17:30– 17:45	Path selection of a spherical capsule in a branched channel: effect of the side branch geometry	Anne-Virginie SALSAC (UTC)
17:45– 19:00	French-Canadian students teams working Extra rooms with materials and softwares : 104 and 108 Esclanong, 1st floor	
19:00– 21:00	Cocktail reception at Zamanski tower of SU, Panoramic view of Paris	

Friday, June 22

Venue:

Sorbonne Université Campus Pierre and Marie Curie,
4 Place Jussieu, 75005 Paris, Esclangon building
Astier Amphitheater

Friday, June 22, Morning Session		
<i>Presentations of French and Canadian start-ups, Tremplin Carnot Interfaces, Canadian incubator Velocity associated to UW and SATT Lutech</i>		
Time	Theme	Presenter
9:00 – 9:30	MEDELLA HEALTH, Canadian start-up	Maarij BAIG / Harry GANDHI
9:30 – 10:00	Senior@dom https://www.senioradom.com	Vincent KRAUS
10:00 – 10:20	Tremplin Carnot Interfaces	Amal EL FALLAH SEGHROUCHNI, Deputy Director of Tremplin Carnot Interfaces
10:20 – 11:00	Coffee break	
11:00 – 11:30	Velocity incubator center at University of Waterloo	Katie MACCANN
11:30 – 12:00	SATT Lutech at SU	Naima LEBAL
12:00– 13:30	Lunch at Atrium Hall	

Friday, June 22, Afternoon Session		
<i>Bio-Hackathon teams results, round table, awards for best teams and closing</i>		
Time	Theme	Presenter
13:30 – 15:15	Presentations of Bio-Hackathon teams results	20mn per team (10mn presentation and 10mn questions)
15:15– 16:00	Coffee break (Scientific committee's meeting for the selection of the best Bio-Hackathon project)	
16:00 – 17:30	Round table (companies, MDs and researchers) animated by Cécile LEGALLAIS (UTC)	
17:30– 18:00	Awards giving for the best projects, closings and acknowledgments	

Parallel session of IEEE System of Systems Engineering Conference (SoSE) 2018,

“SoS approach for Ambient Assisted Living and vital telemonitoring”

Thursday morning, 10h30-12h30, Jussieu Campus, Corridor ??, Room 105

Chairs: Carla TARAMASCO, Dan ISTRATE.

Time	Theme	Presenter
10h30 – 10h50	Towards Data-Centric Genetic Cryptography for Telemonitoring and Ambient Assisted Living Systems	Zoubir HAMICI
10h50 – 11h10	Cognitive and functional rehabilitation using serious games and a system of systems approach.	Halim TANNOUS
11h10 – 11h30	ADL Platform: Using Technology to Enhance the Quality of Life of the Aging Population.	Carla TARAMASCO; Rodrigo OLIVARES; Roberto MUNOZ; Tomas RODENAS; Felipe MARTINEZ; Jacques DEMONGEOT.
11h30 – 11h50	Monitoring chronic disease at home using connected devices.	Amira TLIJA
11h50 – 12h10	AAL Platforms Challenges in IoT Era: A Tertiary Study.	Paulo Armando CAVALCANTE AGUILAR
12h10 – 12h30	An Algorithm for Fall Detection using Data from SmartWatch	Italo ARAUJO; Lucas DOURADO; Letícia FERNANDES; Rossana Maria DE CASTRO ANDRADE; Paulo Armando CAVALCANTE AGUILAR

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