ISCD INSTITUT DES SCIENCES DU CALCUL ET DES DONNÉES
SORBONNE UNIVERSITÉS

UPMC SORBONNE UNIVERSITÉS

Paris, 6 June 2017

Sixth ISCD Summer School, July 17–Aug. 11, 2017
Scientific Visualization – Data Analytics
Roscoff Marine Station, France

Dear Participant,

On behalf of the scientific committee, I am very pleased to extend a warm welcome to the 2017 Summer School on Bioinformatics and visual data analysis.

By joining our summer program, you will actively work on a number of areas of bioinformatics and visual data analytics in lectures, workshops and supervisions. You will experience approaches to these challenging topics, meet and interact with students from other universities and academic centres attending this school. Faculty who are acknowledged experts in their research disciplines will teach lectures and mini-courses.

To help you prepare your visit, we are providing this package of additional information about the programme, the conference centre and Roscoff. Please read through this information before your arrival. To assist you in finding the information you need, please do not hesitate to contact us.

We look forward to welcoming you to Roscoff personally and to your participation in this summer event.

Yours truly,

Pr. Pascal Frey, director

Institut des sciences du calcul et des données

FED 3/2017
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ISCD Summer School 2017
in Bioinformatics and Visual Data Analysis

ISCD Summer Schools **"Computational Challenges at the Interfaces"** seek to promote academically motivated young students by strengthening their methodological understanding in linking theory and numerical experiments. They convey the excitement of new progress in computational sciences through the stimulus of learning. The objectives are to train and attract new undergraduate and newly graduate students interested by working at the interfaces between disciplines.

This year Summer School will provide theoretical lectures and hands-on training in bioinformatics and visual data analysis. The concrete application of theories in innovative research projects is a task which is far from trivial. It involves a good understanding of the theory, but it also requires skill, creativity and sensitivity for their adjustment to experimental contexts. Our lecturers will help the students to face and take into account these challenges.

The course of the programme

The summer school consists of a four-week programme covering two active research fields, alternating lectures and hands-on sessions. Students will get a thorough introduction to the main concepts in bioinformatics and visual data analysis, and to the underlying mathematical and computational methods applied to these topics. In each period, we tackle the key methodological challenges that arise in almost all research efforts, with consideration within concrete fields of applied research. The modules of the first and second week follow a certain didactical course respectively.

Participants, summer school Roscoff 2016.

The detailed programme will be posted at the beginning of every period.

General information

Contact ISCD

Sophie Fassy, Pr. Pascal Frey: + 33 (0)1 44 27 51 02

In case of emergency, after hours or during weekends, please dial: 02.98.29.23.90

Location

The Roscoff Station is a CNRS Conference Centre and offers all infrastructure for organising university-level courses and hands-on sessions. All courses will take place in the conference room (auditorium) located on the second floor of Yves Delage building. Hands-on sessions will be carried out in the computer room located in the Hotel de France building.

Accomodation in residence

The Gulf Stream residence has 41 single rooms and 6 double rooms available to student participants. The restaurant is open for lunch and dinners for guests as well as for the Marine Station staff. It is famous among the community for the quality of its food and its service. An access code will be given to you upon your arrival to allow you to enter the Gulf Stream hotel.

To facilitate your travel plans, you are welcome to arrive at the station the day before the school starts (i.e. on Sunday July 17th for students attending the first or both sessions, or on July 31st for students attending the second session only) and leave the day after its ending (Saturday August 13th).

The room numbers will be posted at the entrance of the residence. The rooms are open and keys are inside.

Note: the code **41706** will give you access to the residence and to the lecture/computer rooms.

Meals for residents

Your meals (breakfasts, lunches and dinners) for the duration of the summer school are included Monday to Friday. Breakfast will be served between **7:45** and **8:45**. Lunch will be served at **12:30** and dinner at **19:00**. On weekends (Saturday-Sunday), you will need to make your own arrangement for breakfast, lunch and dinner (allow approx. 60 euros / weekend meals).

Computers and electronics

The Gulf Stream and all facilities at Roscoff Marine Station are equipped with a wireless network. You will be registered as UPMC students during the summer school and will be provided with a login and password to connect. If you have problem connecting to the network, please contact the teaching assistants that will notify the Roscoff Station's IT officer.

Wifi access codes:

Gulfstream residence: user= ICS2017 passwd= sbroscoff
The codes for the lecture/meeting rooms are listed in the attached document.

Coming to Roscoff

If you have chosen to travel by train you will arrive at the Roscoff train station. Departure is scheduled at Paris Montparnasse train station. Train platform will be announced 20 minutes before departure. Take the TGV train to Morlaix and then change for a regional express train (or a bus, if indicated).

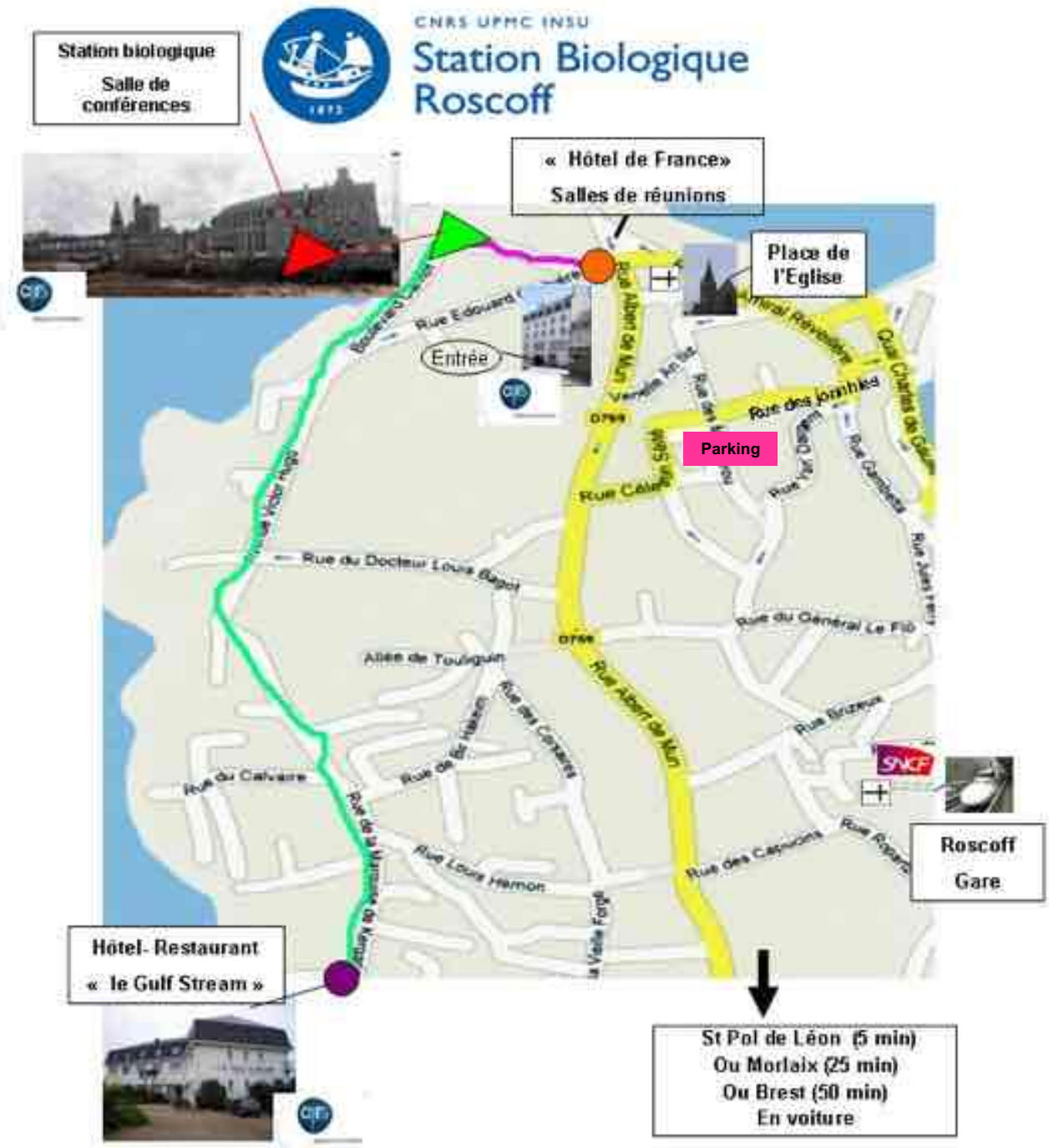
- **by train:** the nearest TGV train station is **Morlaix**.
  Regional express train Morlaix - Roscoff takes 29 minutes.
  Bus (SNCF) Morlaix - Roscoff takes 35 minutes.
  Roscoff train station:+33 (0)298 697 020
  TGV train Paris - Morlaix : departure **Paris Montparnasse** station.
  Train journey takes about 3 hours.

- **by air:**
  From Paris **Charles de Gaulle airport** to **Paris Montparnasse train station**:
  locate **Paris by bus - Air France** (web link) :
  Terminal 1: Exit 32 on the Arrivals level.
  Terminal 2A-2C: Exit C2.
  Terminal 2E-2F: Exit E8 or F9.
  Terminal 2G: this terminal is linked to Terminal 2F (Entrance 2.10) by the free N2 shuttle bus.
  The N2 shuttle bus runs from 05:30 to 23:00.
  Maximum service frequency: every 6 minutes. Average journey time: 15 minutes.
  Terminal 3: get off at Terminal 1 and take the free CDGVAL shuttle train to Terminal 3 stop.

  Fares: 17 euros (single), 14.5 euros (group, > 4 persons).

Arrival in Roscoff

Walk from the train station to the hotel "The Gulf Stream" (see map below).
The list of room assignments will be posted in the lobby of the hotel.



▲ Station Biologique - SALLE DE CONFERENCES.

● Hôtel restaurant « le Gulf-Stream » .

● Hôtels de France. Salles de réunions.

CNRS UPMC INSU
Station Biologique
Roscoff

ACCES WIFI

Gulf Stream : le code Wifi sera commun à tous les participants.
réseau : "sbr_public " - Identifiant : ICS2017 - Mot de passe : sbroscoff

Hôtel de France: Réseau "wifi-guest", les identifiants et code wifi sont dans les chambres.

Salle de conférence : Utiliser le réseau "wifi-guest"
il vous appartient de remettre un identifiant et mot de passe de liste ci jointe, par personne.

	Identifiant	Mot de passe	Personne	
1	ics1	Sxw347Zi	Vecchio	Federica
2	ics2	PCe3i2e7	Gervasoni	Federica
3	ics3	42rNA9xw	Meng	Huqi
4	ics4	U9Zwwm42	Letcher	Brice
5	ics5	3Fp87xrC	Renaux	Demir
6	ics6	YWtg83o8	Ribeiro Sabidussi	Emanoel
7	ics7	Ff3D4q4s	Thimonier	Chloé
8	ics8	4u4J8fRe	Verkin	Louise
9	ics9	Qn18hMm1	Wang	Yishu
10	ics10	d0gEb77K	Mansour	Yasmine
11	ics11	q64HvTx9	Perrot	Maxime
12	ics12	24M1Dsfs	Gueda	Moussa
13	ics13	Y816epmC	Quesnel	Emeric
14	ics14	eI9l2Yo5	Manneheut	Léa
15	ics15	yFKhz871	Dubois	Léonard
16	ics16	p94j6TYj	Seol-Kong	Kim
17	ics17	dPdA369m	Kocova	Pavlina
18	ics18	94Ck6Tle	El Yaagoubi	Anaas
19	ics19	40kK8iNy	Norgeot	Loïc
20	ics20	oR5G8g1q	Fekete	Jean Daniel
21	ics21	tj0TVf48	Baaden	Marc
22	ics22	nSUx115m	Frey	Pascal
23	ics23	D6U01zsz	Laine	Elodie
24	ics24	8iC2oV0e	Carbone	Alessandra
25	ics25	6oQGy3z1	Bernardes	Julia
26	ics26	2q7WqM3q	Chauvot de Beauchêne	Isaure
27	ics27	fv2P6Bn7	Chikhi	Rayan
28	ics28	h42jII5p	De Vries	Sjoerd
29	ics29	G1M02diz	Lopes	Anne
30	ics30	3u2ooF7H	Rizzi	Raffaella
31	ics31	1pvh61JH	Shaw	Sophie
32	ics32	k1cG8Yw7	Straatman	Dirk
33	ics33	H9J4n0qg	Teppa	Elin
34	ics34	47jKj1Jw	Vicedomini	Riccardo
35	ics35	1DVye56s	Aït Ahmlat	Adel
36	ics36	vp2T2jZ9		
37	ics37	yZVd2y36		
38	ics38	c1eU0Xo3		
39	ics39	5NoS1c0t		
40	ics40	3Y8n7wyQ		
41	ics41	3chKmS96		
42	ics42	1OpC2ab9		
43	ics43	94I5Unbl		
44	ics44	WZs57z8o		
45	ics45	mS70ml3u		
46	ics46	v0Nm44kB		
47	ics47	xuNXi027		
48	ics48	3tw6BuM0		
49	ics49	1h9ptCU4		
50	ics50	6dx4YIn8		
51	ics51	jh1QI79y		
52	ics52	V8l09Ube		
53	ics53	6vcC48Ud		
54	ics54	xbhM5Z78		
55	ics55	oX55Pub2		
56	ics56	LZ4w1ll5		
57	ics57	ifbO83O6		
58	ics58	rJc1m3A2		
59	ics59	hPX6y50w		
60	ics60	HO8kw8t0		

Summer School "Computational Trends at the interfaces"

Bioinformatics - Visual data analysis

July 17 - August 11, 2016, Roscoff

Week 1: Protein and Protein Complex Structures

Mon. Jul 17 D. Straatman

09:00 - 12:00 Introduction to protein and protein complex structures
14:00 - 17:00 Visualisation/manipulation of structures

Tue. Jul 18 S. De Vries & I. Chauvot de Beauchêne

09:00 - 12:00 Molecular docking, concepts and algorithms
14:00 - 17:00 Manipulation of different docking tools I

Wed. Jul 19 S. De Vries & I. Chauvot de Beauchêne

09:00 - 12:00 Protein-nucleic acid docking, flexibility in docking
14:00 - 17:00 Manipulation of different docking tools II

Thu. July 20 A. Lopes & E. Laine

09:00 - 12:00 Evolution of protein complexes
14:00 - 17:00 Analysis of docking results I

Fri. July 21 A. Lopes & E. Laine

09:00 - 12:00 Promiscuity versus specificity, identification of cellular partners
14:00 - 17:00 Analysis of docking results II

Week 2: Sequence analysis and genomics

Mon. Jul 24 R. Chikhi & S. Shaw

09:00 - 12:00 Introduction to sequence analysis, main algorithms (suffix trees / BWT / backward search, graphs for DNA assembly
14:00 - 17:00 Implementation and usage of BWT

Tue. Jul. 25 J. Bernardes & R. Vicedomini

09:00 - 12:00 Protein domain annotations/identification
14:00 - 17:00 Application on genomic and meta-genomic datasets

Wed. Jul. 26 R. Rizzi

09:00 - 12:00 Gene annotation and GTF file format
14:00 - 17:00 Development of python code to manipulate GTF, for full-length transcript & CDS reconstruction

Thu. Jul 27 A. Ait-Hamlat

09:00 - 12:00 Gene regulatory networks (GRN), main algorithms
14:00 - 17:00 Manipulation/Analysis of expression data and GRNs

Fri. Jul 28 A. Carbone & E. Teppa

09:00 - 12:00 Phylogeny and co-evolution
14:00 - 17:00 Application of coevolution to protein analysis

Summer School "Computational Trends at the interfaces"

Bioinformatics - Visual data analysis

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Week 3: scientific visualization

Mon. Jul 31 P. Frey

09:00 - 12:00 introduction to scientific visualization
definition, purposes, motivations, technological aspects

14:00 - 17:00 Hands-on session I

Tue. Aug 1 P. Frey

09:00 - 12:00 Computer graphics primer
quest for realism, illumination models

14:00 - 17:00 Hands-on session II

Wed. Aug 2 P. Frey

09:00 - 12:00 Mathematical primer
geometric transformations, affine/projective transformations

14:00 - 17:00 Hands-on session III

Thu. Aug 3 P. Frey

09:00 - 12:00 Surface representation and approximation
curves and surfaces introduction, differential geometry, triangulations

14:00 - 17:00 Hands-on session IV

Fri. Aug 4 P. Frey

09:00 - 12:00 Data analysis and visualization
data structures, scalar/vector/tensor fields

14:00 - 17:00 Hands-on session V

Week 4: scientific visualization

Mon. Aug 7 J.D. Fekete

09:00 - 12:00 Introduction to Information Visualization

14:00 - 17:00 Hands-on session (D3.js + Python/Pandas as backend)

Tue. Aug 8 J.D. Fekete

09:00 - 12:00 Introduction to Visual Analytics

14:00 - 17:00 Hands-on session (Python with Scikit Learn, the Jupyter Notebook)

Wed. Aug 9 M. Baaden

09:00 - 12:00 Introduction. Principles of scientific illustration

14:00 - 17:00 Hands-on session on molecular visualization (UnityMol, VMD)

Thu. Aug 10 M.Baaden

09:00 - 12:00 Molecular simulations

14:00 - 17:00 Hands-on session on analysis of molecular simulation data (VMD, Paraview)

Fri. Aug 11 M. Baaden

09:00 - 12:00 Introduction to interactive visualisation and manipulation of molecular models

14:00 - 17:00 Hands-on session on interactive simulations, virtual and augmented reality (UnityMol/HireRNA, VMD/BioSpring, UnityMolVR)