The Fourth Year Project Selection Process

Andrew Gee

Department of Engineering, Cambridge

17 March 2025

Type A and B projects

Type A and B projects

Type A projects are proposed by staff, Type B by students.

Type A and B projects

Type A projects are proposed by staff, Type B by students.

Tuesday 29 April is the deadline for sending Type B proposals to coordinators.

Type A and B projects

Type A projects are proposed by staff, Type B by students.

Tuesday 29 April is the deadline for sending Type B proposals to coordinators.

If a Type B project is not viable, a Type A project must be selected instead.

Type A and B projects

Type A projects are proposed by staff, Type B by students.

Tuesday 29 April is the deadline for sending Type B proposals to coordinators.

If a Type B project is not viable, a Type A project must be selected instead.

Most students choose a Type A project.

Group centres

A: Thermodynamics and Fluid Mechanics
Prof Stewart Cant

B: Electrical Engineering
Prof George Malliaras

C: Mechanics and Materials
Prof Vikram Deshpande

D: Civil, Structural and Environmental Engineering
Prof Abir Al-Tabbaa

F: Information Engineering
Prof Guillaume Hennequin

Overall coordinator
Prof Andrew Gee

Group centres

A: Thermodynamics and Fluid Mechanics
Prof Stewart Cant (Mrs Kate Graham)

B: Electrical Engineering
Prof George Malliaras (Mrs Susan Murkett)

C: Mechanics and Materials
Prof Vikram Deshpande (Ms Liz Howard)

D: Civil, Structural and Environmental Engineering
Prof Abir Al-Tabbaa (Mrs Sue Stocks)

F: Information Engineering
Prof Guillaume Hennequin (Mrs Lina Zvaginyte-Bagociene)

Overall coordinator
Prof Andrew Gee

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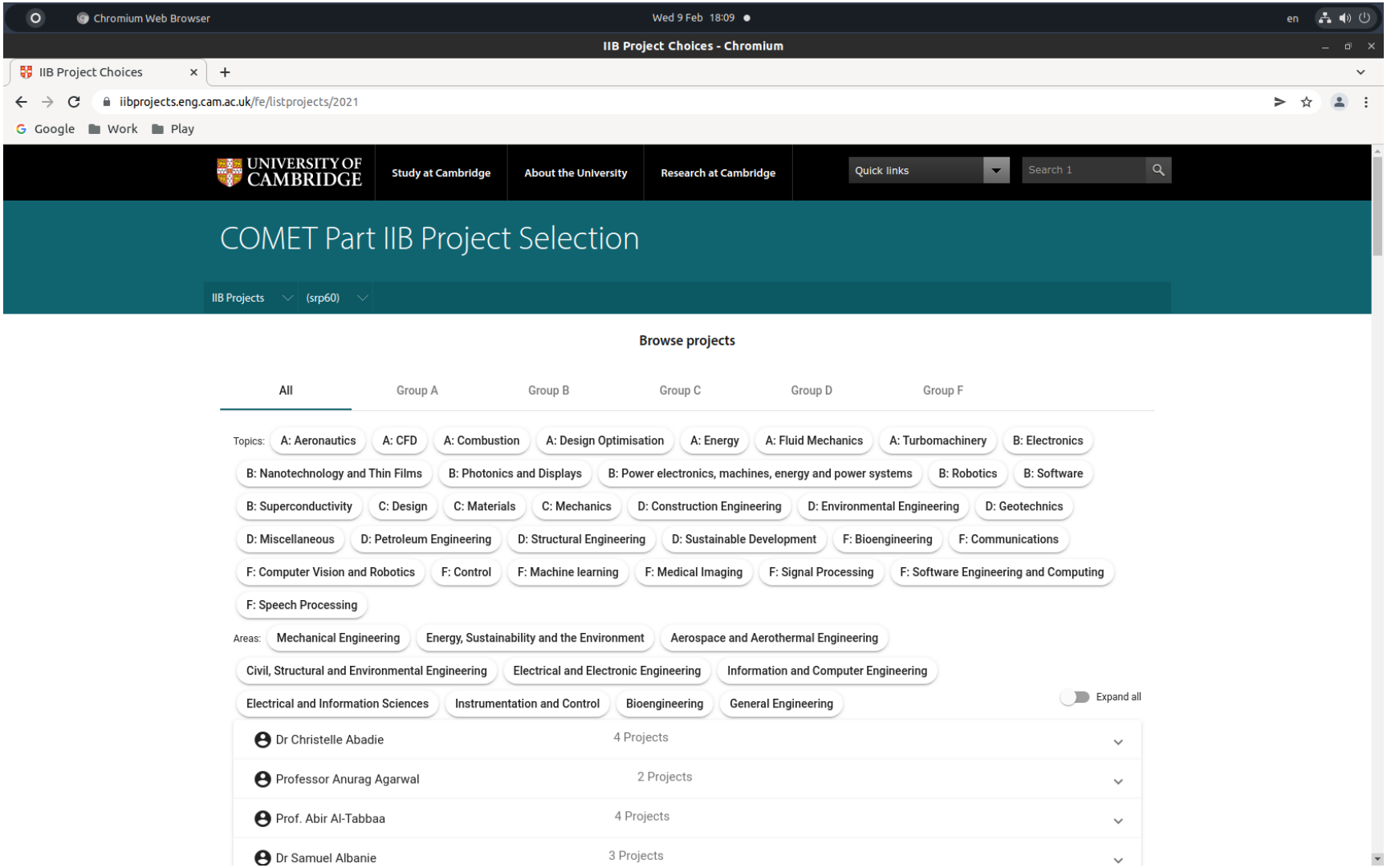
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A: CFD
A: Combustion
A: Design Optimisation
A: Energy
A: Fluid Mechanics
A: Turbomachinery
B: Electronics
B: Nanotechnology and Thin Films
B: Photonics and Displays
B: Power electronics, machines, energy and power systems
B: Robotics
B: Software
B: Superconductivity
C: Design
C: Materials
C: Mechanics
D: Construction Engineering
D: Environmental Engineering
D: Geotechnics
D: Miscellaneous
D: Petroleum Engineering
D: Structural Engineering
D: Sustainable Development
F: Bioengineering
F: Communications
F: Computer Vision and Robotics
F: Control
F: Machine learning
F: Medical Imaging
F: Signal Processing
F: Software Engineering and Computing
F: Speech Processing
Areas:
Mechanical Engineering
Energy, Sustainability and the Environment
Aerospace and Aerothermal Engineering
Civil, Structural and Environmental Engineering
Electrical and Electronic Engineering
Information and Computer Engineering
Electrical and Information Sciences
Instrumentation and Control
Bioengineering
General Engineering
Expand all
Dr Christelle Abadie
4 Projects
Professor Anurag Agarwal
2 Projects
Prof. Abir Al-Tabbaa
4 Projects
Dr Samuel Albanie
3 Projects

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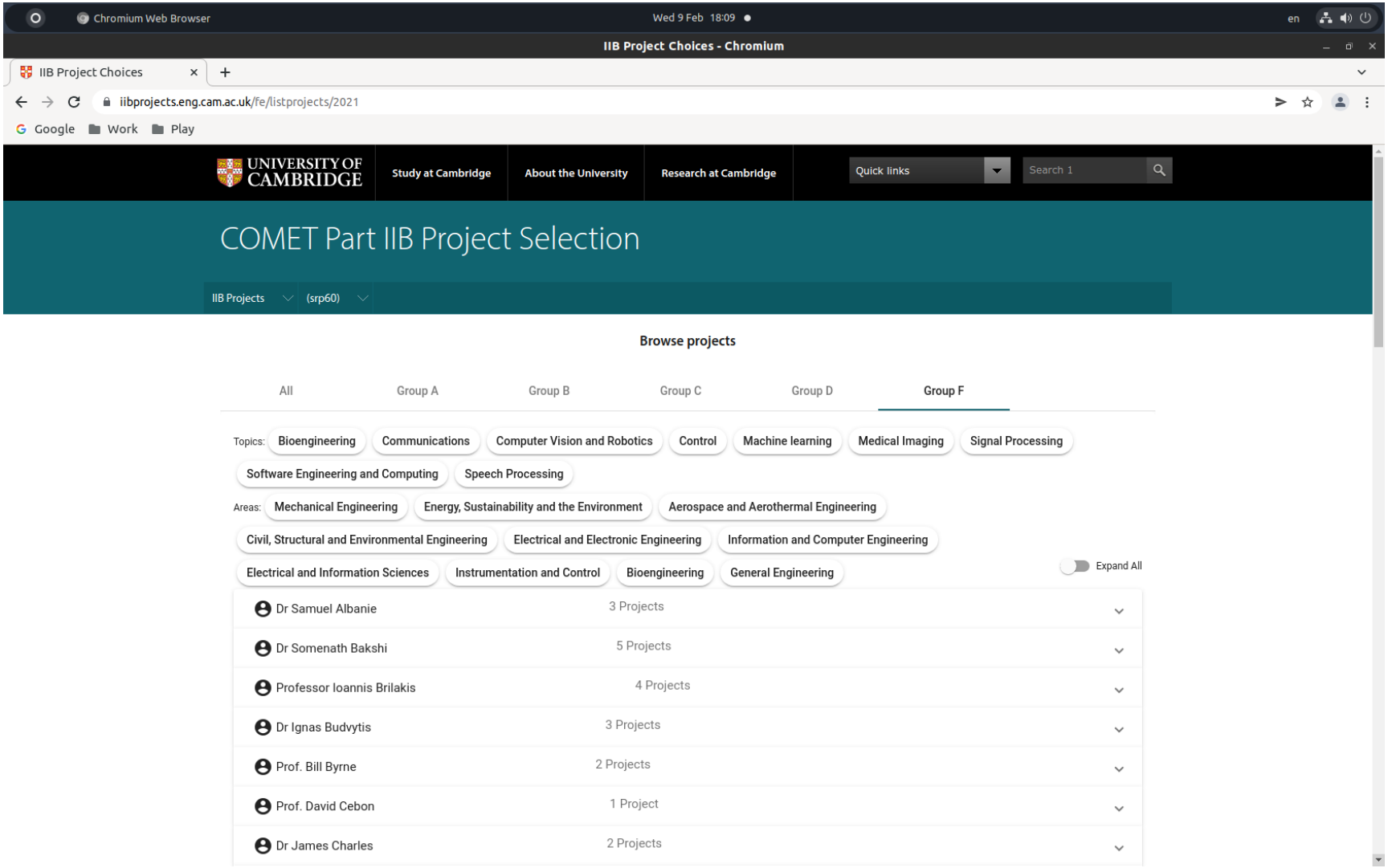
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Electrical and Information Sciences
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General Engineering
Expand All
Dr Samuel Albanie 3 Projects
Dr Somenath Bakshi 5 Projects
Professor Ioannis Brilakis 4 Projects
Dr Ignas Budvytis 3 Projects
Prof. Bill Byrne 2 Projects
Prof. David Cebon 1 Project
Dr James Charles 2 Projects

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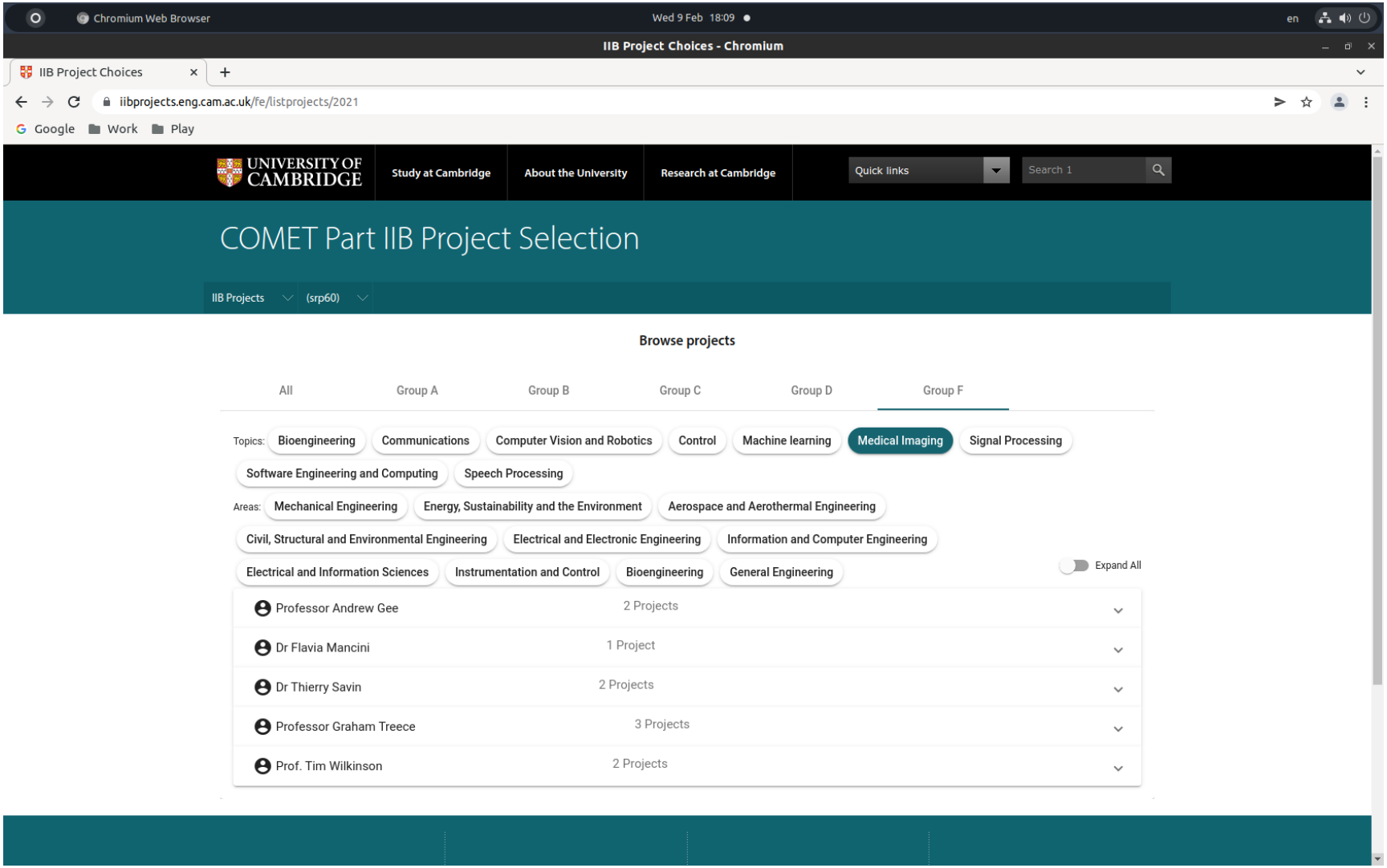
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Instrumentation and Control
Bioengineering
General Engineering
Expand All
Professor Andrew Gee
2 Projects
Dr Flavia Mancini
1 Project
Dr Thierry Savin
2 Projects
Professor Graham Treece
3 Projects
Prof. Tim Wilkinson
2 Projects

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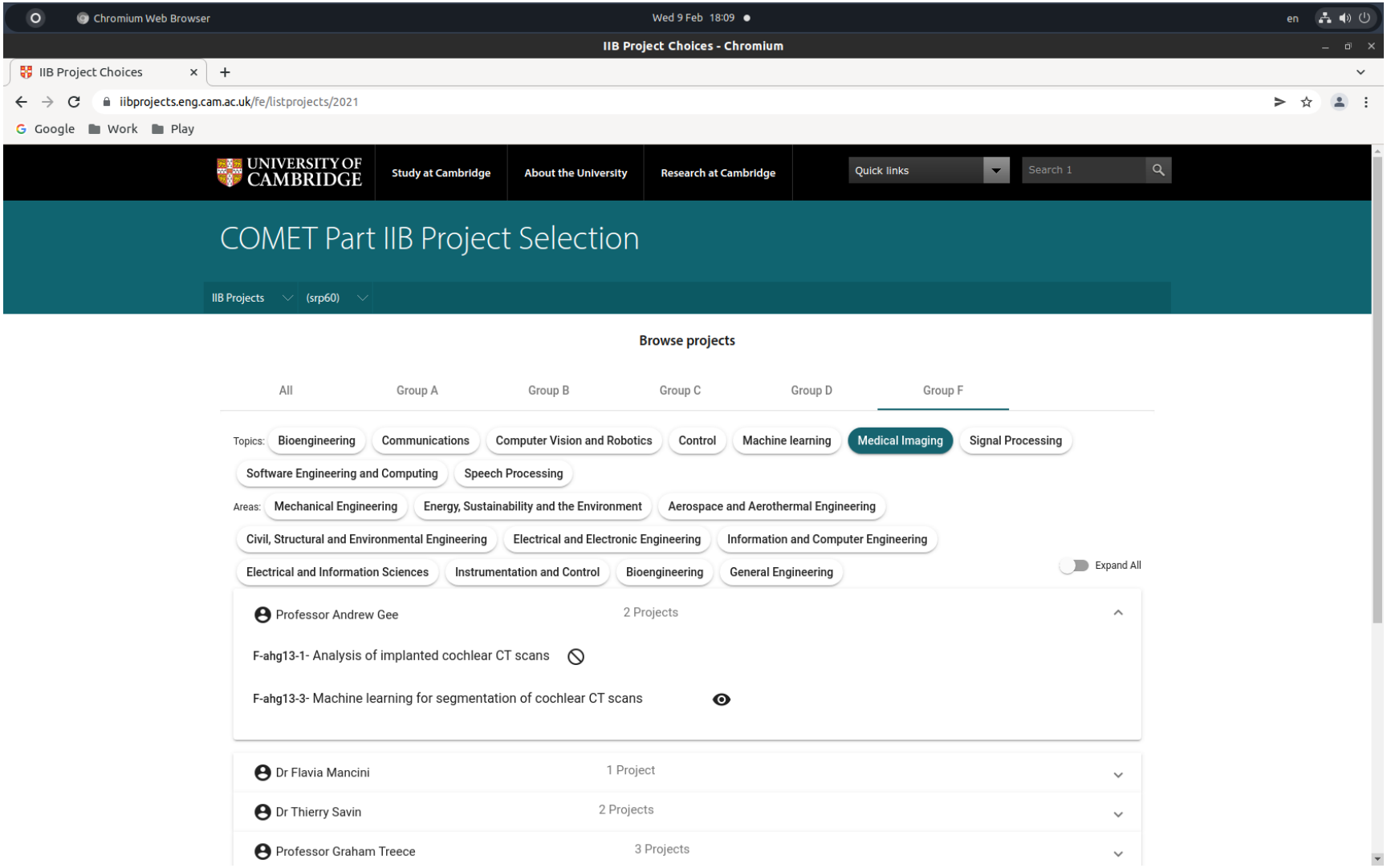
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Information and Computer Engineering
Electrical and Information Sciences
Instrumentation and Control
Bioengineering
General Engineering
Expand All
Professor Andrew Gee
2 Projects
F-ahg13-1- Analysis of implanted cochlear CT scans
F-ahg13-3- Machine learning for segmentation of cochlear CT scans
Dr Flavia Mancini
1 Project
Dr Thierry Savin
2 Projects
Professor Graham Treece
3 Projects

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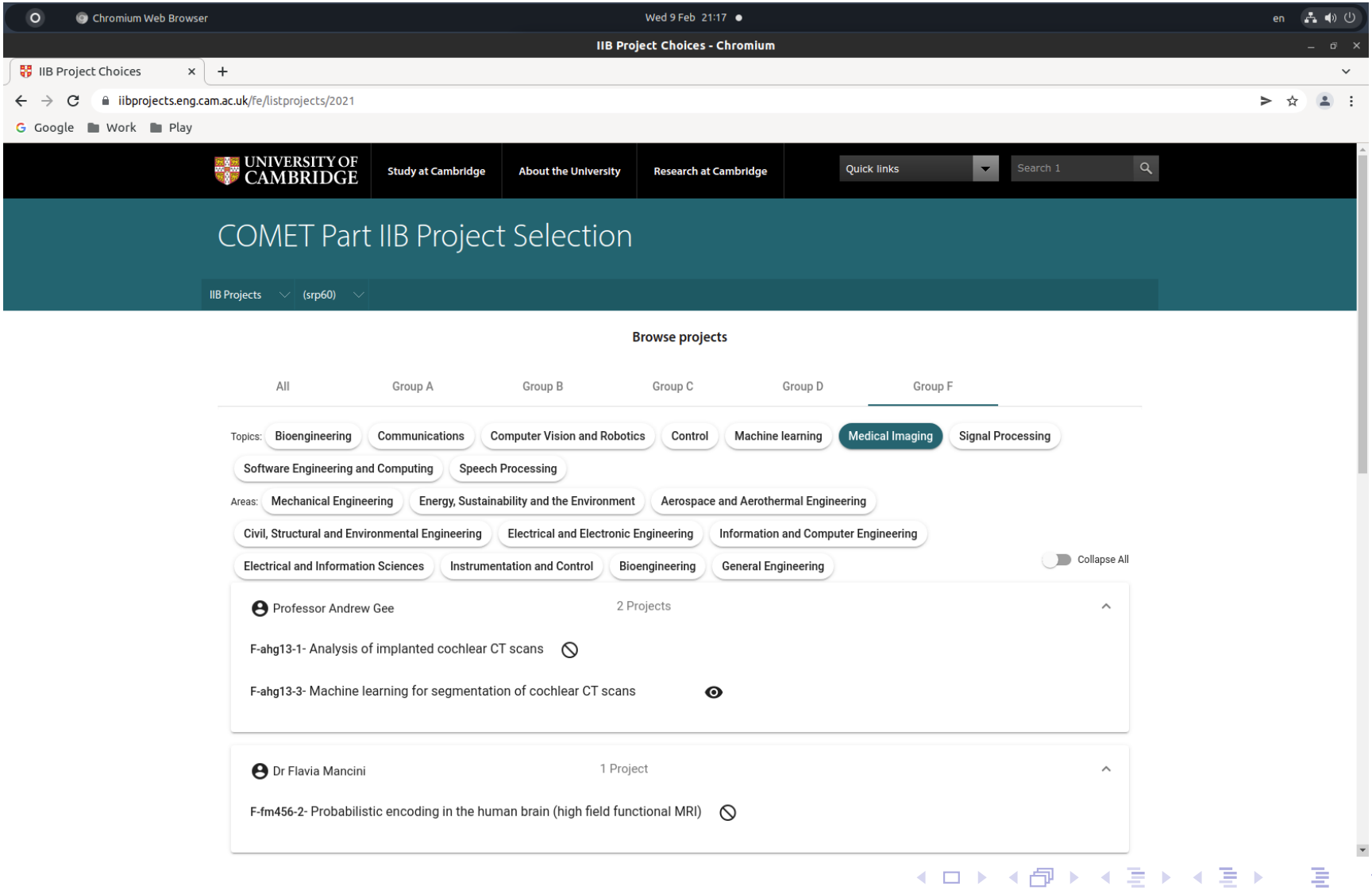
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Electrical and Electronic Engineering
Information and Computer Engineering
Electrical and Information Sciences
Instrumentation and Control
Bioengineering
General Engineering
Collapse All
Professor Andrew Gee
2 Projects
F-ahg13-1- Analysis of implanted cochlear CT scans
F-ahg13-3- Machine learning for segmentation of cochlear CT scans
Dr Flavia Mancini
1 Project
F-fm456-2- Probabilistic encoding in the human brain (high field functional MRI)

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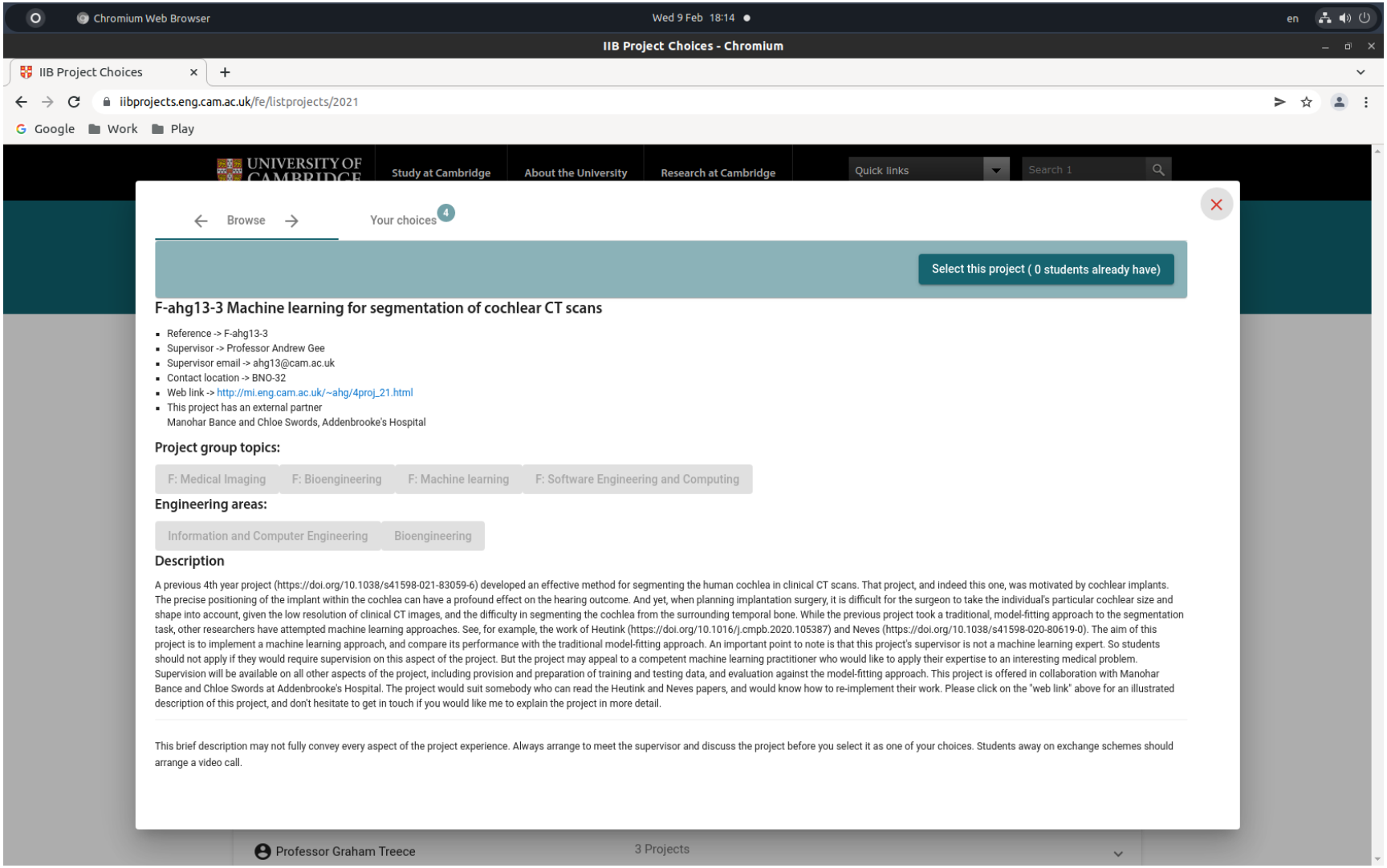
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4
Select this project (0 students already have)
F-ahg13-3 Machine learning for segmentation of cochlear CT scans
Reference -> F-ahg13-3
Supervisor -> Professor Andrew Gee
Supervisor email -> ahg13@cam.ac.uk
Contact location -> BNO-32
Web link -> http://mi.eng.cam.ac.uk/~ahg/4proj_21.html
This project has an external partner
Manohar Bance and Chloe Swords, Addenbrooke's Hospital
Project group topics:
F: Medical Imaging
F: Bioengineering
F: Machine learning
F: Software Engineering and Computing
Engineering areas:
Information and Computer Engineering
Bioengineering
Description
A previous 4th year project (https://doi.org/10.1038/s41598-021-83059-6) developed an effective method for segmenting the human cochlea in clinical CT scans. That project, and indeed this one, was motivated by cochlear implants. The precise positioning of the implant within the cochlea can have a profound effect on the hearing outcome. And yet, when planning implantation surgery, it is difficult for the surgeon to take the individual's particular cochlear size and shape into account, given the low resolution of clinical CT images, and the difficulty in segmenting the cochlea from the surrounding temporal bone. While the previous project took a traditional, model-fitting approach to the segmentation task, other researchers have attempted machine learning approaches. See, for example, the work of Heutink (https://doi.org/10.1016/j.cmpb.2020.105387) and Neves (https://doi.org/10.1038/s41598-020-80619-0). The aim of this project is to implement a machine learning approach, and compare its performance with the traditional model-fitting approach. An important point to note is that this project's supervisor is not a machine learning expert. So students should not apply if they would require supervision on this aspect of the project. But the project may appeal to a competent machine learning practitioner who would like to apply their expertise to an interesting medical problem. Supervision will be available on all other aspects of the project, including provision and preparation of training and testing data, and evaluation against the model-fitting approach. This project is offered in collaboration with Manohar Bance and Chloe Swords at Addenbrooke's Hospital. The project would suit somebody who can read the Heutink and Neves papers, and would know how to re-implement their work. Please click on the "web link" above for an illustrated description of this project, and don't hesitate to get in touch if you would like me to explain the project in more detail.
This brief description may not fully convey every aspect of the project experience. Always arrange to meet the supervisor and discuss the project before you select it as one of your choices. Students away on exchange schemes should arrange a video call.
Professor Graham Treece
3 Projects

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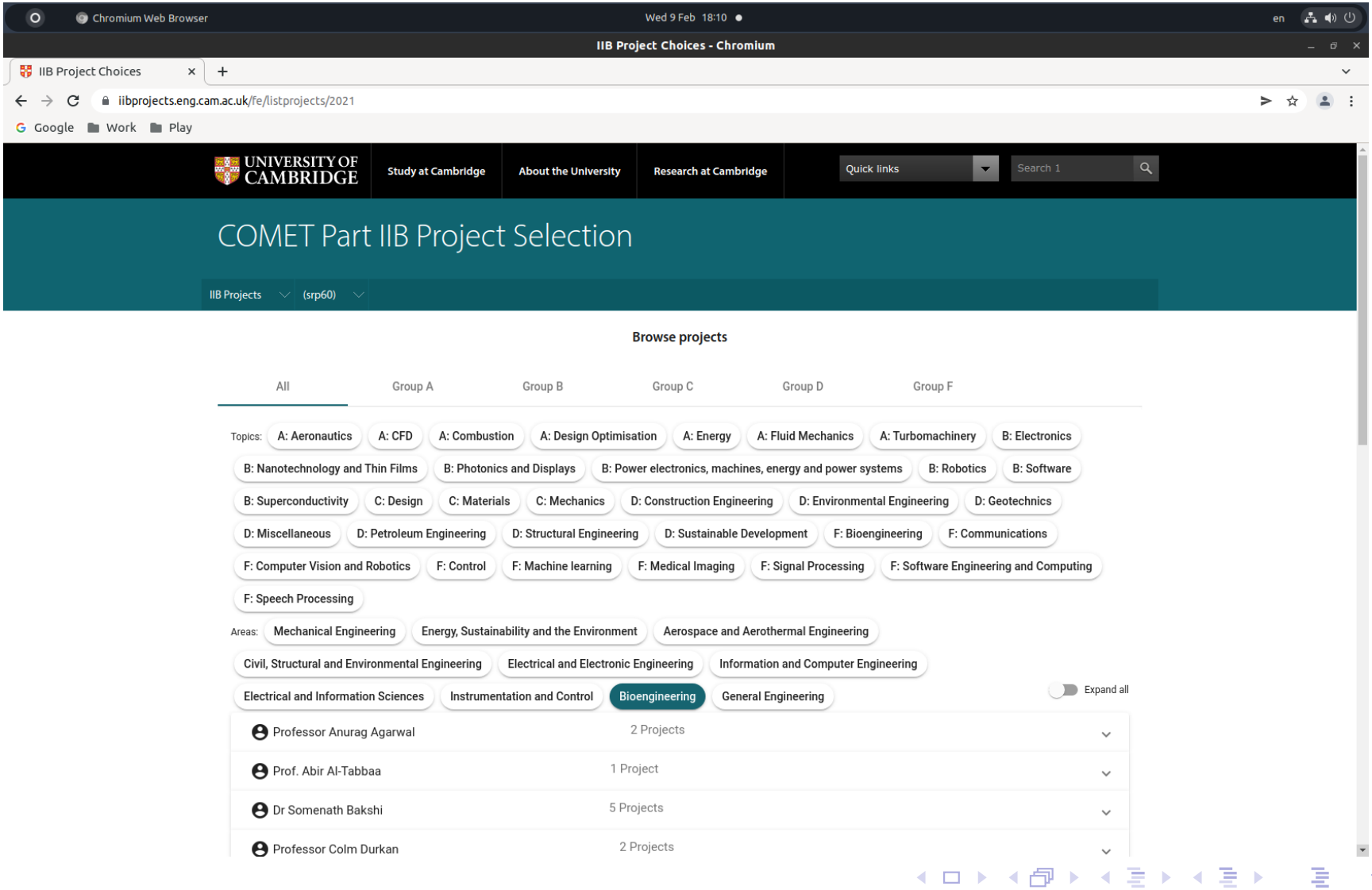
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Bioengineering
General Engineering
Expand all
Professor Anurag Agarwal
2 Projects
Prof. Abir Al-Tabbaa
1 Project
Dr Somenath Bakshi
5 Projects
Professor Colm Durkan
2 Projects

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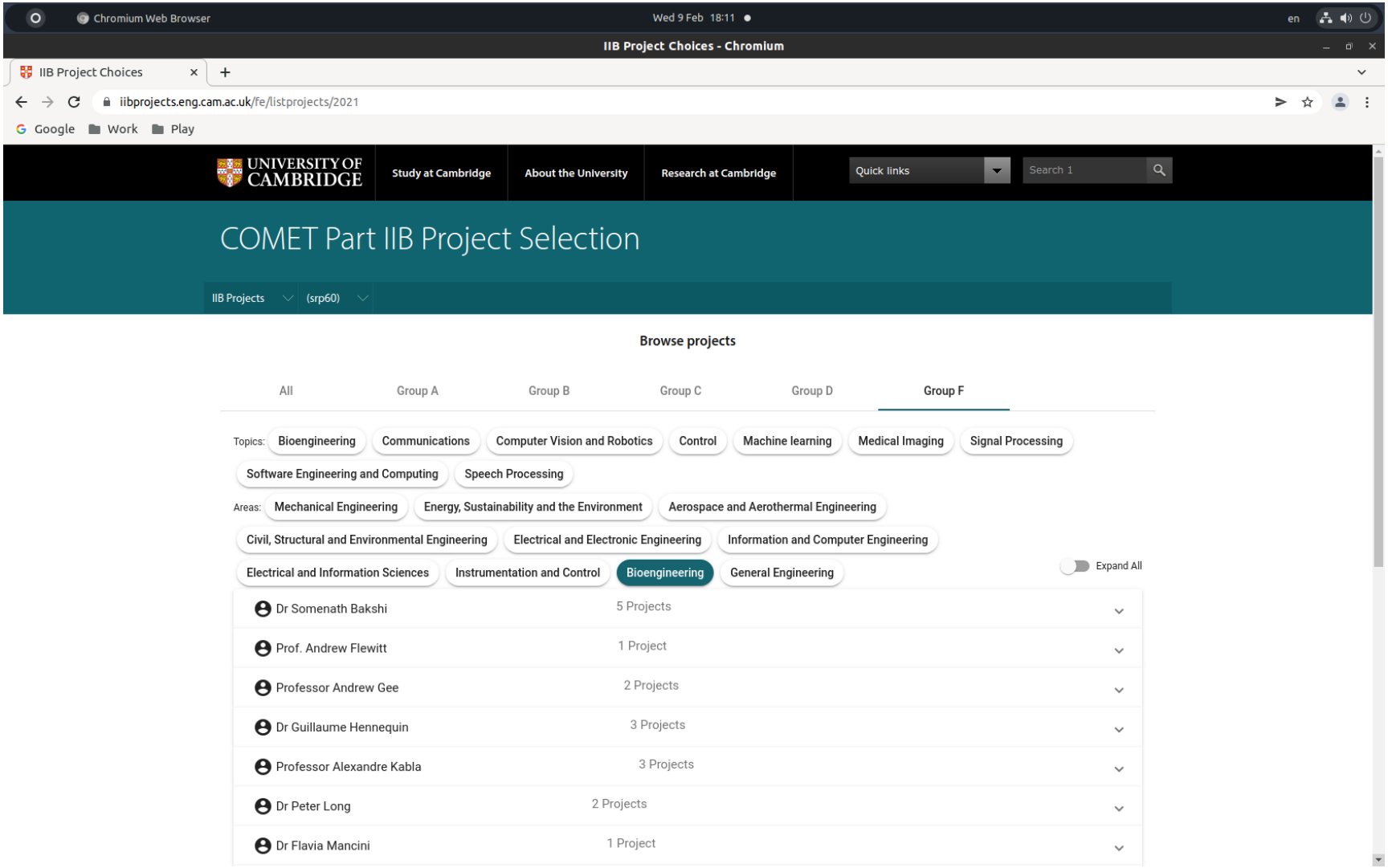
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Expand All
Dr Somenath Bakshi
5 Projects
Prof. Andrew Flewitt
1 Project
Professor Andrew Gee
2 Projects
Dr Guillaume Hennequin
3 Projects
Professor Alexandre Kabla
3 Projects
Dr Peter Long
2 Projects
Dr Flavia Mancini
1 Project

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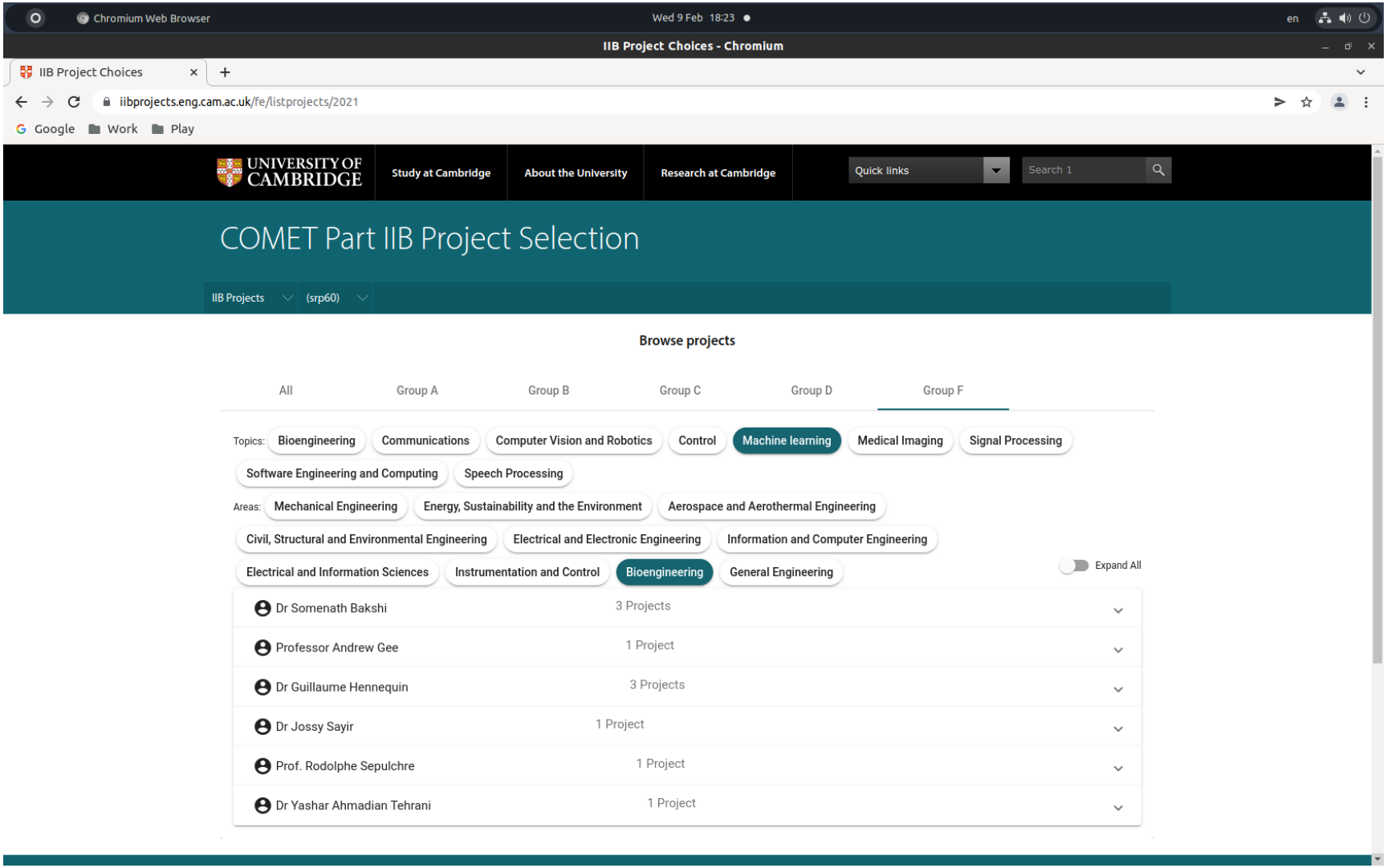
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Expand All
Dr Somenath Bakshi
3 Projects
Professor Andrew Gee
1 Project
Dr Guillaume Hennequin
3 Projects
Dr Jossy Sayir
1 Project
Prof. Rodolphe Sepulchre
1 Project
Dr Yashar Ahmadian Tehrani
1 Project

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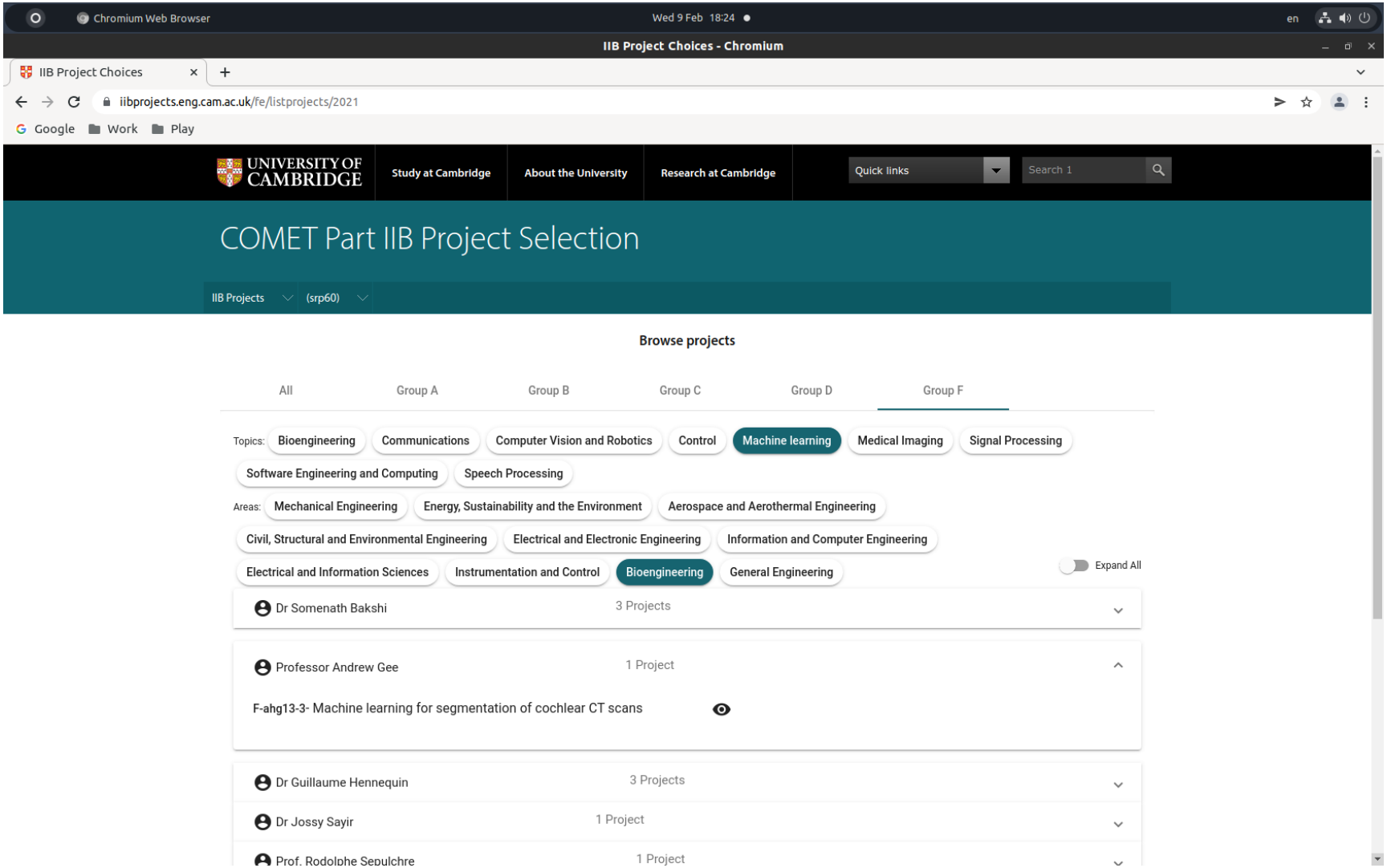
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1 Project
F-ahg13-3- Machine learning for segmentation of cochlear CT scans
Dr Guillaume Hennequin
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Dr Jossy Sayir
1 Project
Prof. Rodolphe Sepulchre
1 Project

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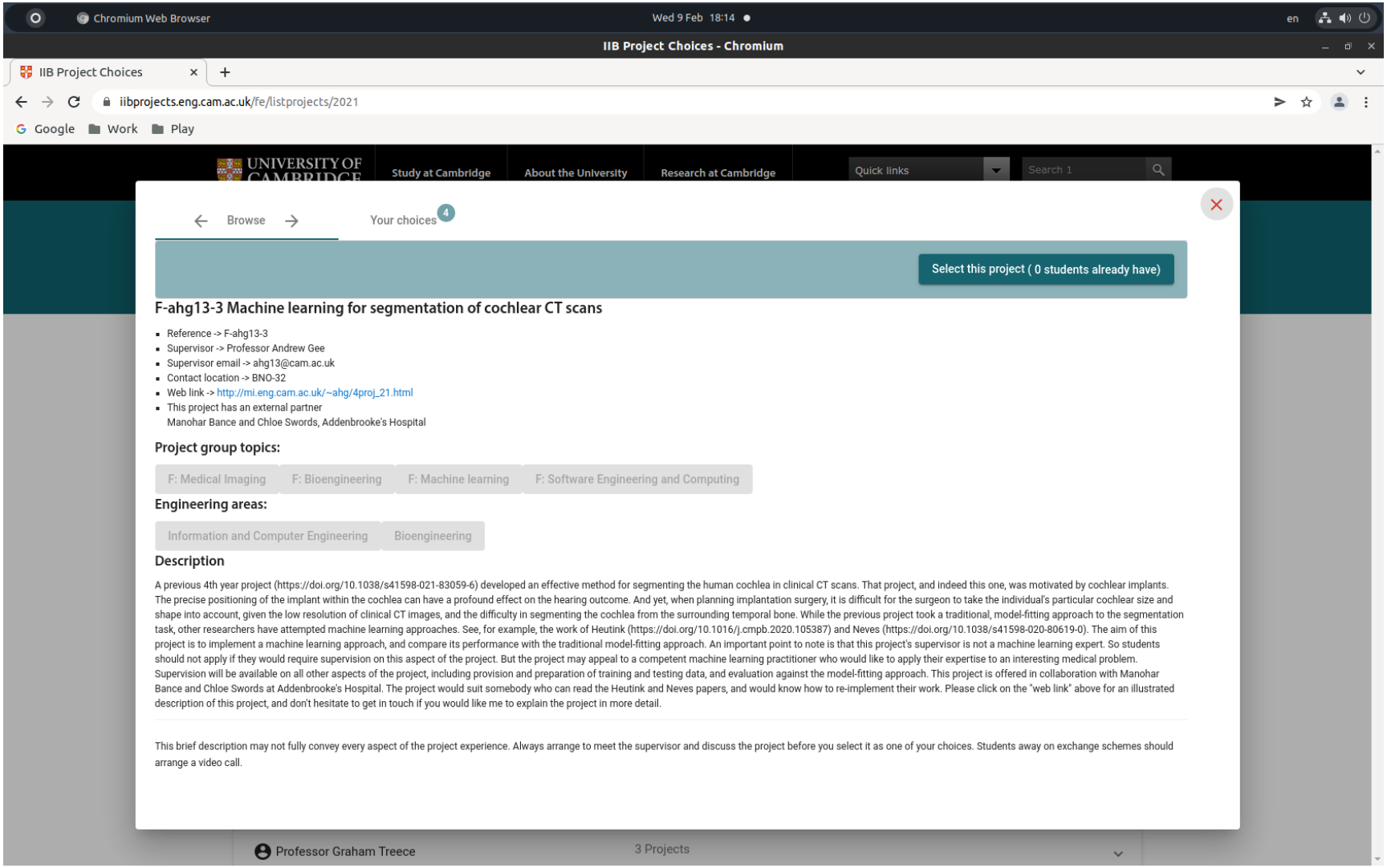
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3 Projects

Meeting supervisors

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Ask about supervision style, what you will *actually be doing*, research environment, chances of getting the project.

Factors to consider

It is not necessary to choose a project in your engineering area.

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You need to be excited about the project.

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You need to get on with the supervisor and have compatible working habits.

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You need to get on with the supervisor and have compatible working habits.

You need the time and space to be able to balance module and project work.

Factors to consider

It is not necessary to choose a project in your engineering area.

You need to be excited about the project.

You need to get on with the supervisor and have compatible working habits.

You need the time and space to be able to balance module and project work.

Be aware of any collaborations and confidentiality issues.

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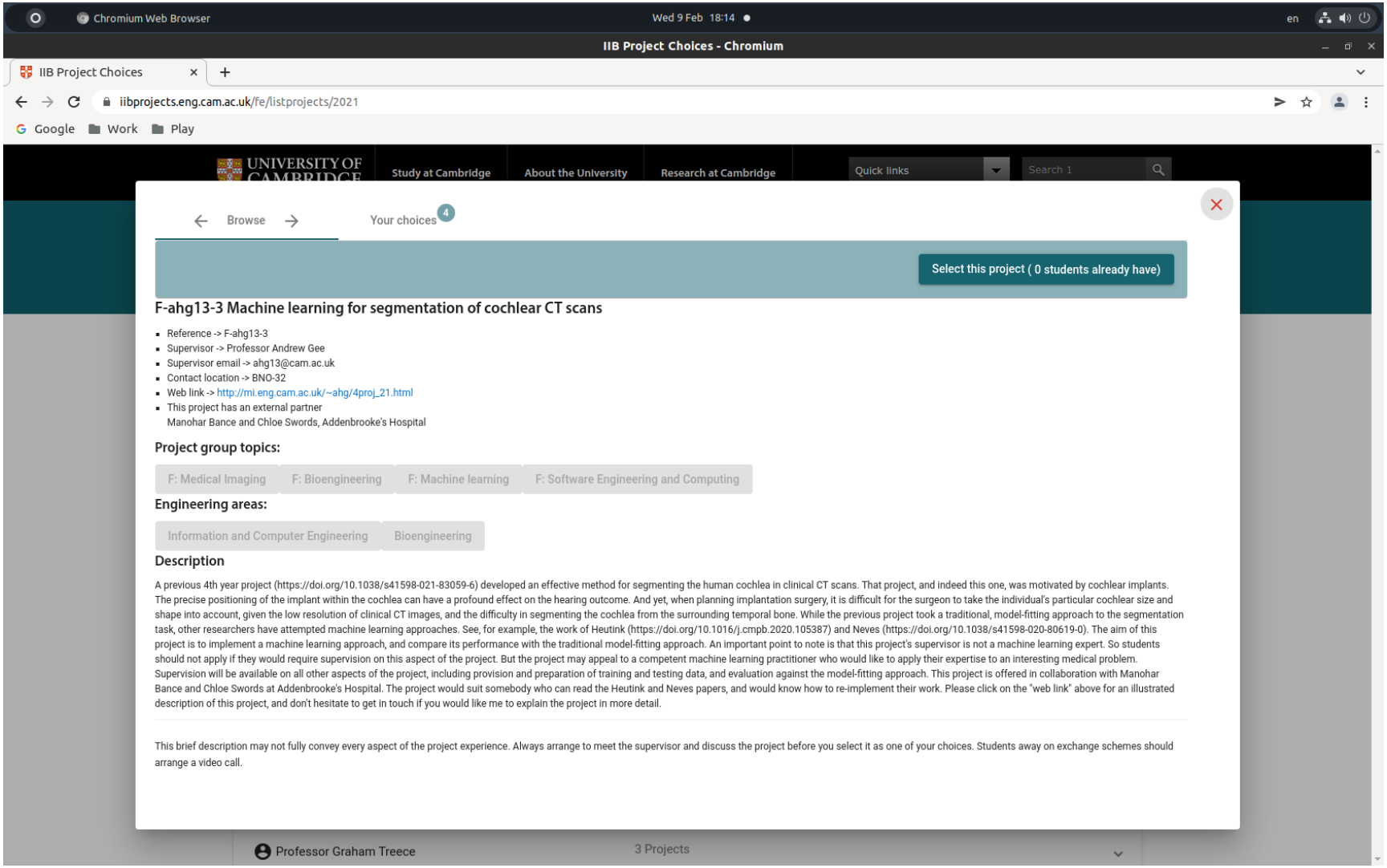
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Supervisor -> Professor Andrew Gee
Supervisor email -> ahg13@cam.ac.uk
Contact location -> BNO-32
Web link -> http://mi.eng.cam.ac.uk/~ahg/4proj_21.html
This project has an external partner
Manohar Bance and Chloe Swords, Addenbrooke's Hospital
Project group topics:
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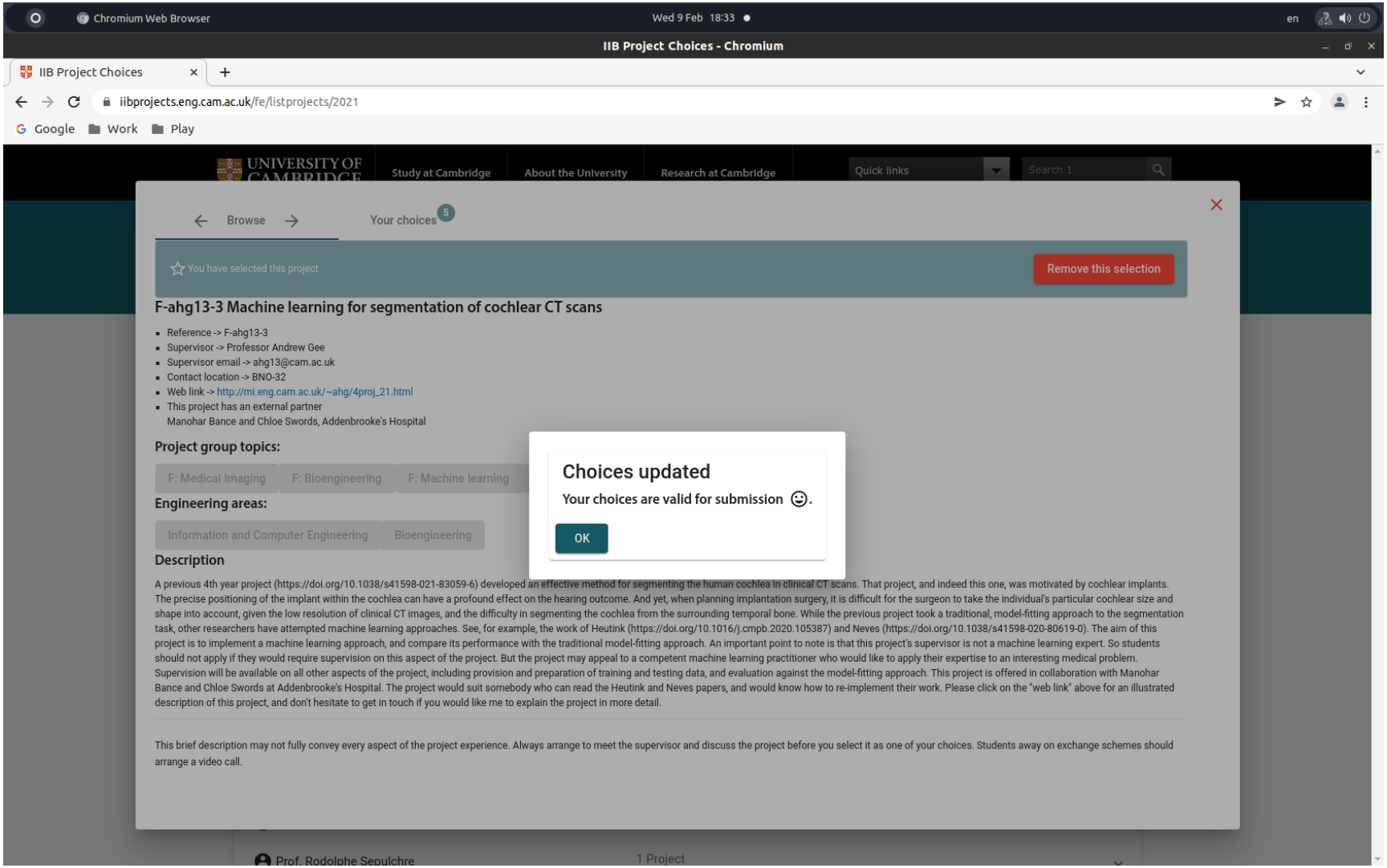
F: Bioengineering
F: Machine learning
F: Software Engineering and Computing
Engineering areas:
Information and Computer Engineering
Bioengineering
Description
A previous 4th year project (https://doi.org/10.1038/s41598-021-83059-6) developed an effective method for segmenting the human cochlea in clinical CT scans. That project, and indeed this one, was motivated by cochlear implants. The precise positioning of the implant within the cochlea can have a profound effect on the hearing outcome. And yet, when planning implantation surgery, it is difficult for the surgeon to take the individual's particular cochlear size and shape into account, given the low resolution of clinical CT images, and the difficulty in segmenting the cochlea from the surrounding temporal bone. While the previous project took a traditional, model-fitting approach to the segmentation task, other researchers have attempted machine learning approaches. See, for example, the work of Heutink (https://doi.org/10.1016/j.cmpb.2020.105387) and Neves (https://doi.org/10.1038/s41598-020-80619-0). The aim of this project is to implement a machine learning approach, and compare its performance with the traditional model-fitting approach. An important point to note is that this project's supervisor is not a machine learning expert. So students should not apply if they would require supervision on this aspect of the project. But the project may appeal to a competent machine learning practitioner who would like to apply their expertise to an interesting medical problem. Supervision will be available on all other aspects of the project, including provision and preparation of training and testing data, and evaluation against the model-fitting approach. This project is offered in collaboration with Manohar Bance and Chloe Swords at Addenbrooke's Hospital. The project would suit somebody who can read the Heutink and Neves papers, and would know how to re-implement their work. Please click on the "web link" above for an illustrated description of this project, and don't hesitate to get in touch if you would like me to explain the project in more detail.
This brief description may not fully convey every aspect of the project experience. Always arrange to meet the supervisor and discuss the project before you select it as one of your choices. Students away on exchange schemes should arrange a video call.
Professor Graham Treece
3 Projects

COMET


Chromium Web Browser
Wed 9 Feb 18:33
IIB Project Choices - Chromium
IIB Project Choices
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UNIVERSITY OF CAMBRIDGE
Study at Cambridge
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Research at Cambridge
Quick links
Search 1
Browse
Your choices 5
You have selected this project
Remove this selection
F-ahg13-3 Machine learning for segmentation of cochlear CT scans
Reference -> F-ahg13-3
Supervisor -> Professor Andrew Gee
Supervisor email -> ahg13@cam.ac.uk
Contact location -> BNO-32
Web link -> http://mi.eng.cam.ac.uk/~ahg/4proj_21.html
This project has an external partner
Manohar Bance and Chloe Swords, Addenbrooke's Hospital
Project group topics:
F: Medical Imaging
F: Bioengineering
F: Machine learning
Engineering areas:
Information and Computer Engineering
Bioengineering
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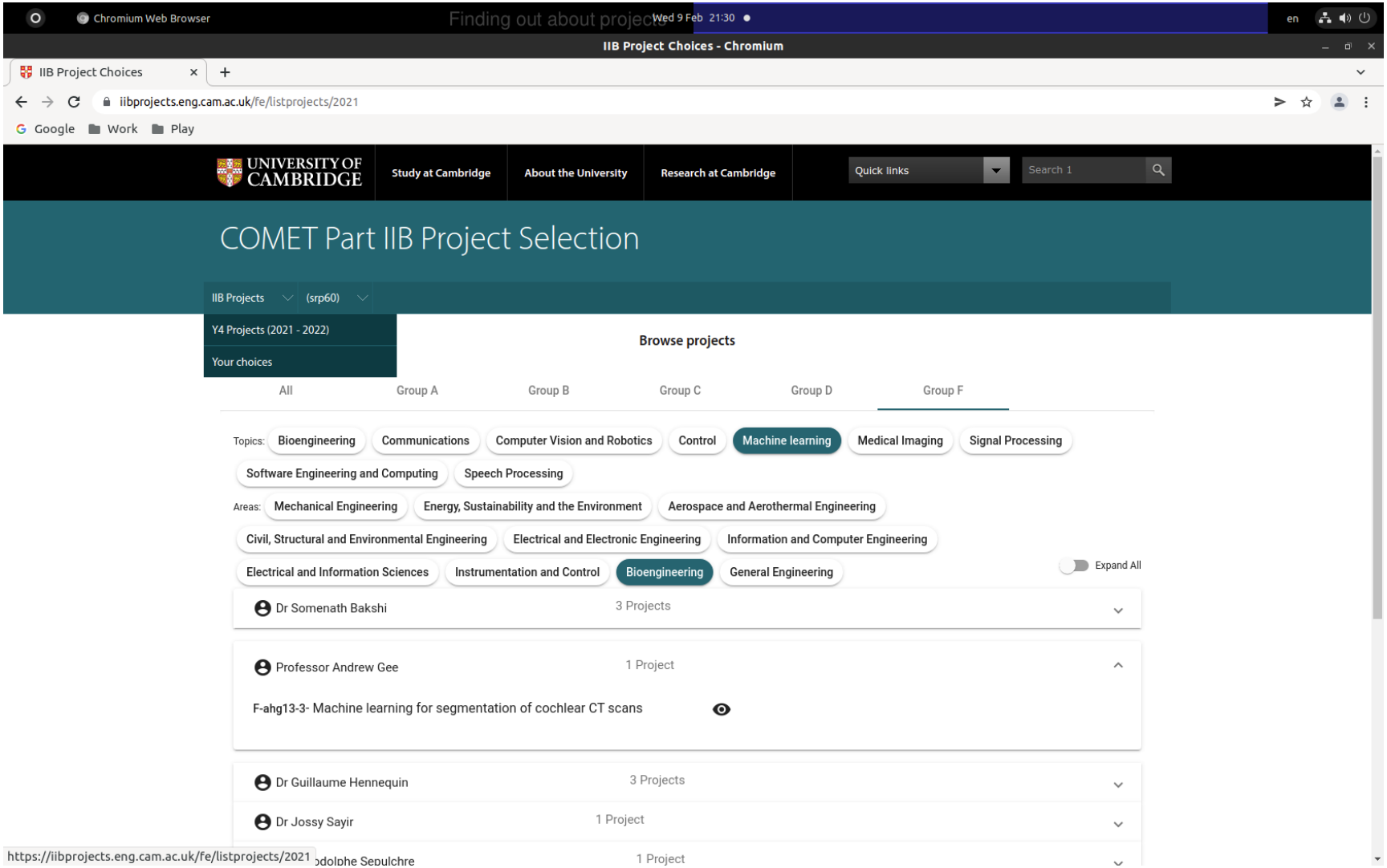
Choices updated
Your choices are valid for submission ☺.
OK
Prof. Rodolphe Sepulchre
1 Project

COMET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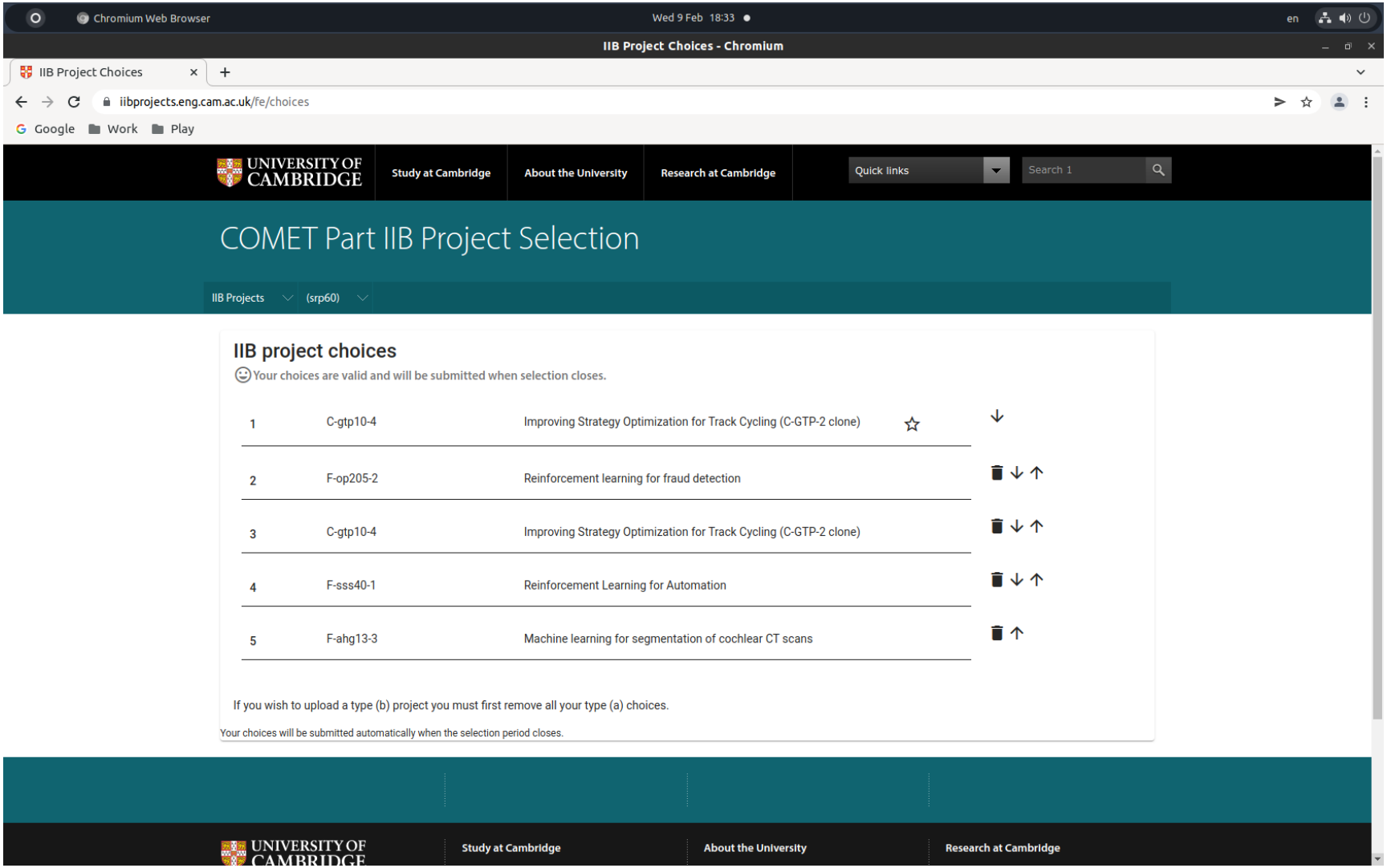
Search 1
COMET Part IIB Project Selection
IIB Projects
(srp60)
Y4 Projects (2021 - 2022)
Your choices
Browse projects
All
Group A
Group B
Group C
Group D
Group F
Topics:
Bioengineering
Communications
Computer Vision and Robotics
Control
Machine learning
Medical Imaging
Signal Processing
Software Engineering and Computing
Speech Processing
Areas:
Mechanical Engineering
Energy, Sustainability and the Environment
Aerospace and Aerothermal Engineering
Civil, Structural and Environmental Engineering
Electrical and Electronic Engineering
Information and Computer Engineering
Electrical and Information Sciences
Instrumentation and Control
Bioengineering
General Engineering
Expand All
Dr Somenath Bakshi
3 Projects
Professor Andrew Gee
1 Project
F-ahg13-3- Machine learning for segmentation of cochlear CT scans
Dr Guillaume Hennequin
3 Projects
Dr Jossy Sayir
1 Project
1 Project
https://iibprojects.eng.cam.ac.uk/fe/listprojects/2021

COMET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Quick links
Search 1
COMET Part IIB Project Selection
IIB Projects
(srp60)
IIB project choices
Your choices are valid and will be submitted when selection closes.
1 C-gtp10-4 Improving Strategy Optimization for Track Cycling (C-GTP-2 clone)
2 F-op205-2 Reinforcement learning for fraud detection
3 C-gtp10-4 Improving Strategy Optimization for Track Cycling (C-GTP-2 clone)
4 F-sss40-1 Reinforcement Learning for Automation
5 F-ahg13-3 Machine learning for segmentation of cochlear CT scans
If you wish to upload a type (b) project you must first remove all your type (a) choices.
Your choices will be submitted automatically when the selection period closes.
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Expressing your preferences

Nominate *between three and five* projects, from at least *three* different supervisors, in order of preference, between 12 and 23 May.

Expressing your preferences

Nominate *between three and five* projects, from at least *three* different supervisors, in order of preference, between 12 and 23 May.

You may amend your choices at any time up to 23 May.

Expressing your preferences

Nominate *between three and five* projects, from at least *three* different supervisors, in order of preference, between 12 and 23 May.

You may amend your choices at any time up to 23 May.

You must spread your choices between at least *three different supervisors*.

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Nominate *between three and five* projects, from at least *three* different supervisors, in order of preference, between 12 and 23 May.

You may amend your choices at any time up to 23 May.

You must spread your choices between at least *three different supervisors*.

Let supervisors know if you are willing to take on any of their other projects.

Allocation

Allocation is not automatic but by consultation amongst staff.

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A *first allocation* list will be posted online on Friday 30 May.

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If you have been unlucky or did not make strategic choices, you should contact the coordinator of the group that is of most interest to you. They will assist you in finding a project.

Take-home points

Apply to *three different supervisors*.

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Check you have compatible working habits.

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Ask what the project *actually involves doing*.

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Any questions?