



Big Data and High-Performance Computing

大数据和高性能计算暑期课程

时间：2018 年 7 月 21 日至 8 月 4 日 费用：1995 英镑

Taught by experts in statistics, operational research and computer science, this programme will help you develop both the theoretical understanding and practical experience of applying methods drawn from data science and analytics.

暑期课程由统计学，运筹学和计算机科学的专家们授课，这将帮助你增强从数据科学和分析法中汲取的理论认识 and 实践经验。

Big Data and High-Performance Computing is a multidisciplinary Summer School split across the Schools of Computer Science and Informatics, Mathematics and Physics and Astronomy. Working together, these Schools will introduce you to a range of in-demand skills for extracting and handling ‘big data’, discovering and communicating meaningful patterns from the data, and applying modelling tools to help businesses and government organizations make better decisions.

大数据和高性能计算是由计算机科学和信息学院，数学学院，物理和天文学学院共同开办的跨学科暑期课程。通过合作，这些学院将向你介绍一系列需求技能，用于提取和处理‘大数据’，从数据中发现和交流有意义的模式，并应用建模工具帮助企业 and 政府机构做出更好的决策。

This Summer School will begin with introductory lectures, workshops and practical sessions intended to provide a basic understanding of programming languages (*Python*, *R* and *C*) and elementary statistical data analysis methods. These activities will provide a grounding for subsequent more advanced topics in data analysis and computing later in the School. The focus will be on practical applications of the various techniques described, showcases by examples from the world-leading research carried out in the School of Physics and Astronomy on data obtained from astronomical satellites such as Planck and Herschel as well as gravitational wave research.

这所暑期课程将从介绍性讲座、研讨会和实践课开始，目的是提供对编程语言（Python、R 和 C）和基本统计数据分析方法的基本了解。这些活动将为以后在学校里进行数据分析和计算的更高级主题奠定基础。重点将放在所描述的各种技术的实际应用上，以物理和天文学学院进行的世界领先的研究为例，展示普朗克和赫歇尔等天文学卫星获得的数据以及引力波研究。

The high-performance computing component of the Summer School will look at important distinctions between shared and distributed memory models, and between data and task-based parallelism, and teach you how to write simple parallel applications. The focus will mainly be on the practical issues of programming modern parallel computers using OpenMP, MPI, and CUDA.

暑期课程的高性能计算组件将着眼于共享和分布式内存模型之间以及数据和任务并行性之间的重要区别,，并教你如何编写简单的并行应用程序。重点将主要放在使用 OpenMP、MPI 和 CUDA 现代并行计算机编程的实际问题上。

To make sure you benefit from this Summer School, we suggest that applicants are familiar with the C programming language, R and *Python*. However, if you are unfamiliar with these languages, but still wish to participate in the course, we can also provide you with tutorial material in advance of the summer school. Although it would be beneficial, no advanced expertise in programming or in statistics is required.

为了确保你从这个暑期课程中收益，我们建议申请人熟悉 C 编程语言，R 和 Python。但是，如果你对 these 语言不熟悉，但仍然希望参加，我们可以在暑期课程之前为您提供教材。虽然这将是有益的，但不需要编程或统计方面的高级专业知识。

If you have any queries about this Summer School, the academic content or how you can prepare for this course, please get in touch with Angela Li on angelacs@foxmail.com

如果您有任何关于这个暑期课程，学术内容或如何准备这门课程的任何疑问，请与李滢联系 angelacs@foxmail.com

Preliminary schedule (Please note this is subject to change.)

初步计划（可能有更改）

Saturday 21 July 2018 7 月 21 日周六	Arrival in Cardiff (Pick up from Heathrow provided) 抵达卡迪夫(提供希思罗机场接机)
Sunday 22 July 2018 7 月 22 日周日	Social event 社会活动
Monday 23 July 2018 7 月 23 日周一	Welcome lecture and orientation scavenger hunt 致欢迎辞及迎新寻宝活动
Tuesday 24 July 2018 7 月 24 日周二	Lecture: Crash course in <i>Python</i> and introduction to data analysis 讲座: Python 速成课程和数据分析导论 Practical session: <i>Python</i> 实践课: Python Problem-solving informal assessment 解决问题的非正式评估
Wednesday 25 July 2018 7 月 25 日周三	Lecture: Introductory Data Analysis (formatting, processing) 讲座: 数据分析入门 (格式化, 处理) Practical Session: Gravitational Waves 实践课: 引力波 Key-note lecture on Gravitational waves 关于引力波的主题演讲 Tour: Astronomical Instrumentation (detectors) 参观: 天文仪器 (探测器)
Thursday 26 July 2018 7 月 26 日周四	Lecture: Multivariate regression models 讲座: 多元回归模型 Laboratory Session 实验室课程
Friday 27 July 2018 7 月 27 日周五	Lecture: Data mining, classification and clustering 讲座: 数据挖掘, 分类和聚类 Laboratory Session 实验室课程 Industrial visit 行业考察
Saturday 28 July 2018 7 月 28 日周六	Field trips and free time 实地考察和自由时间
Sunday 29 July 2018 7 月 29 日周日	Field trips and free time 实地考察和自由时间

Monday 30 July 2018 7 月 30 日周一	Lecture: Machine learning and deep learning 讲座：机器学习与深度学习 Laboratory Session 实验室课程
Tuesday 31 July 2018 7 月 31 日周二	Lecture: Examples of parallelism; shared and distributed memory architectures 讲座：并行的例子；共享和分布式内存结构 Industrial visit 行业考察 Lecture: Programming with OpenMP 4.0 讲座：OpenMP 4.0 编程 Laboratory Session 实验室课程
Wednesday 1 August 2018 8 月 1 日周三	Lecture: Introduction to message passing and the MPI programming model 讲座：消息传递和 MPI 编程模型介绍 Laboratory Session 实验室课程
Thursday 2 August 2018 8 月 2 日周四	Lecture: Programming with GPUs 讲座：GPUs 编程 Laboratory Session 实验室课程
Friday 3 August 2018 8 月 3 日周五	Assessment Day 评估日 Final Gala Ceremony 毕业庆典仪式
Saturday 4 August 2018 8 月 4 日周六	Departure from Cardiff(Drop off to Heathrow provided) or join our extra week travel in the UK 离开卡迪夫（提供希思罗机场送机）或继续参加我们在英国为期一周的旅行（需额外付费）。

Costs 费用

The fee for the Summer School is £1,995.

为期两周的暑期课程的费用为 1995 英镑，

This includes tuition fees, accommodation, 10 meals per week (breakfast and lunch, Monday to Friday), airport pick up and drop off from Heathrow airport on fixed dates (pick up is on 21 July, drop off is 4 August) and excursions organized by Cardiff University (such as Stonehenge and industrial visits).

包括学费，住宿费，周一至周五的早餐和午餐，希思罗机场接送机（7.21 接机，8.4 送机）以及卡迪夫大学组织的短途旅行（比如巨石阵和行业参观）

Contact us 联系我们

If you have any questions or for more information, please email angelacs@foxmail.com or call Angela at +8613263461779 (in Chinese), or visit our WeChat account.

如果您有任何问题或更多信息，[请发送电子邮件至angelacs@foxmail.com](mailto:angelacs@foxmail.com)

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欢迎关注我们的微信公众号-卡迪夫之夏，了解卡迪夫暑期课程的全部内容。

