



2016 杭州·云栖大会
THE COMPUTING CONFERENCE

云栖社区
yq.aliyun.com

大数据可视化

与大自然之美

2016
The Computing Conference

主办单位:



Alibaba Group
阿里巴巴集团

战略合作伙伴:



chenwei@cad.zju
浙江大学CAD&CG国家重点



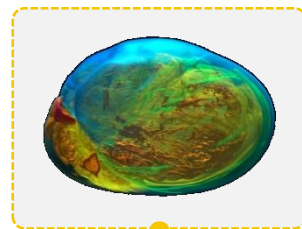
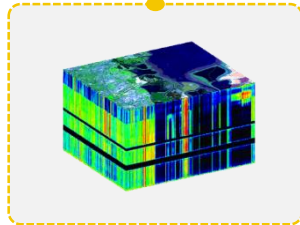
扫码观看大会视频

眼观四路



设备测量

数字成像

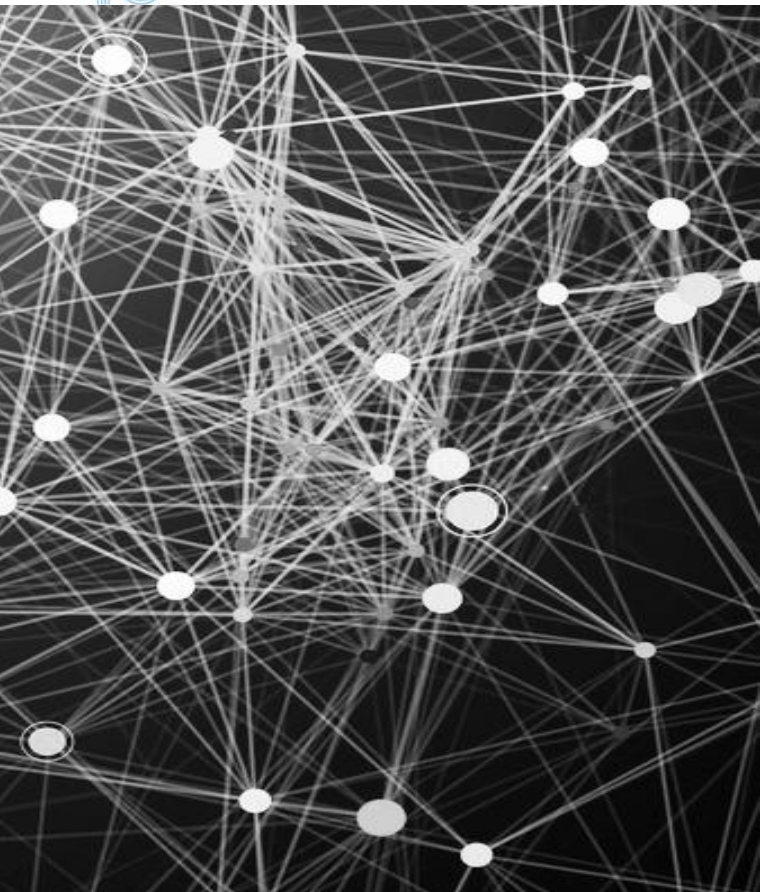


数据可视化



可视化：让数据生动起来

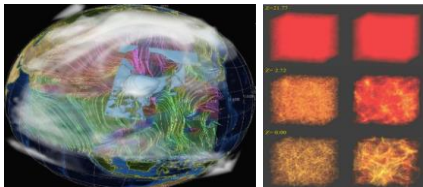




大数据可视化 应用



大科学



大安全



大工程



物联网与智慧城市



互联网与社交媒体



扫码观看大会视频

可视化成为基础自然科学研究的**必要手段**，是科学大数据发展的**必需**

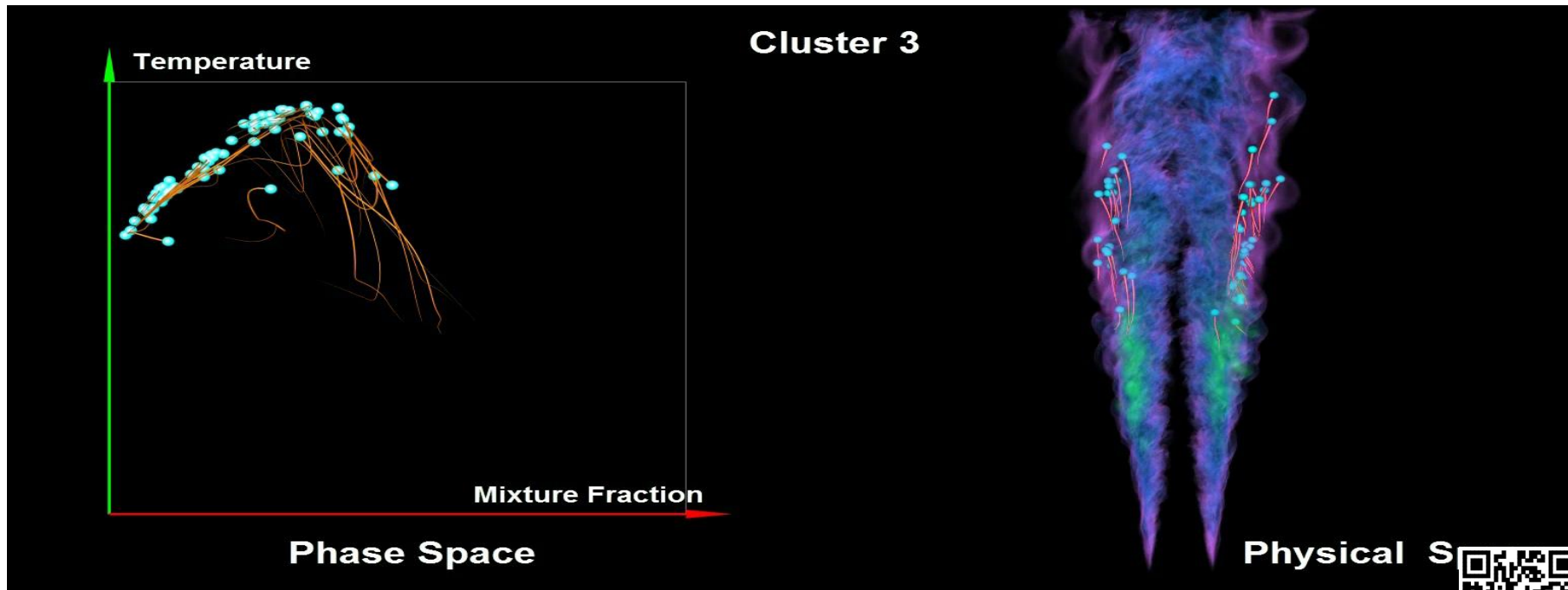


医学

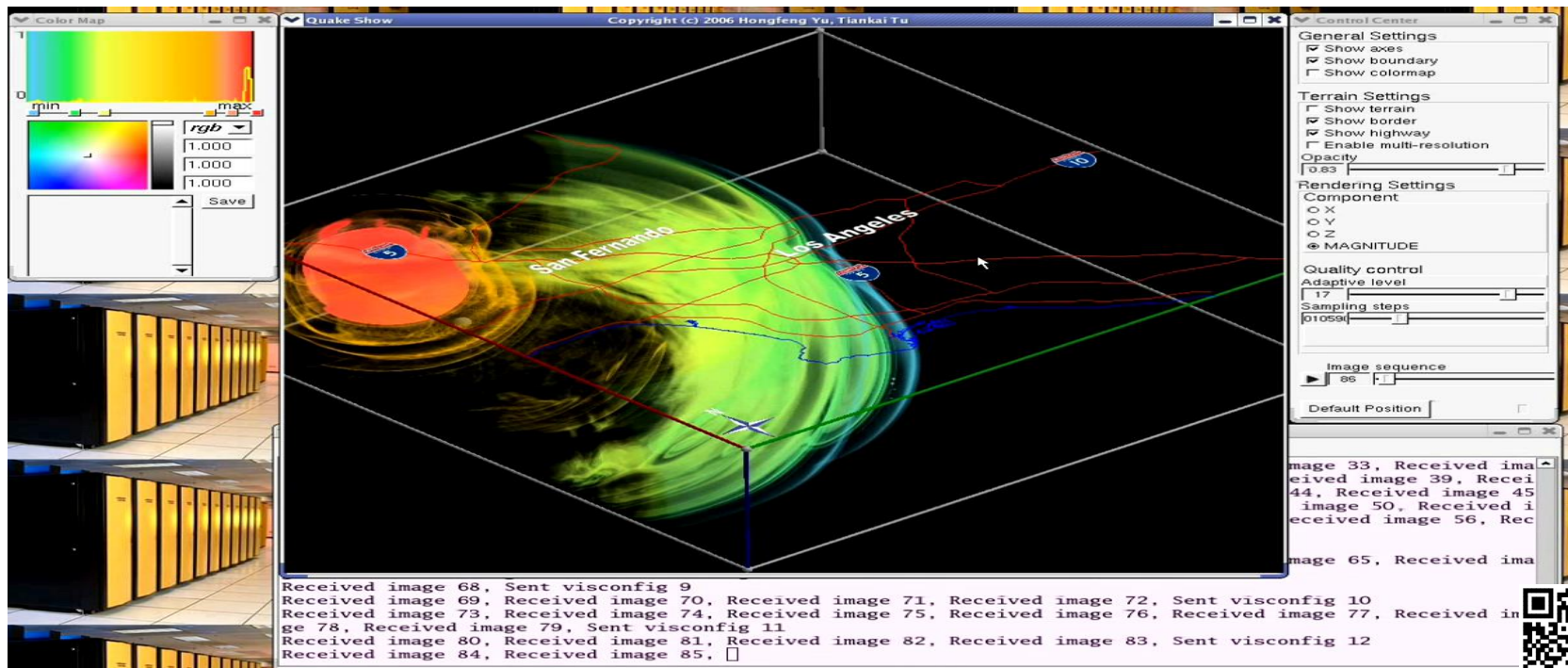


扫码观看大会视频

可视化成为基础自然科学研究的**必要手段**，是科学大数据发展的**必需**



可视化成为基础自然科学研究的必要手段，是科学大数据发展的必需

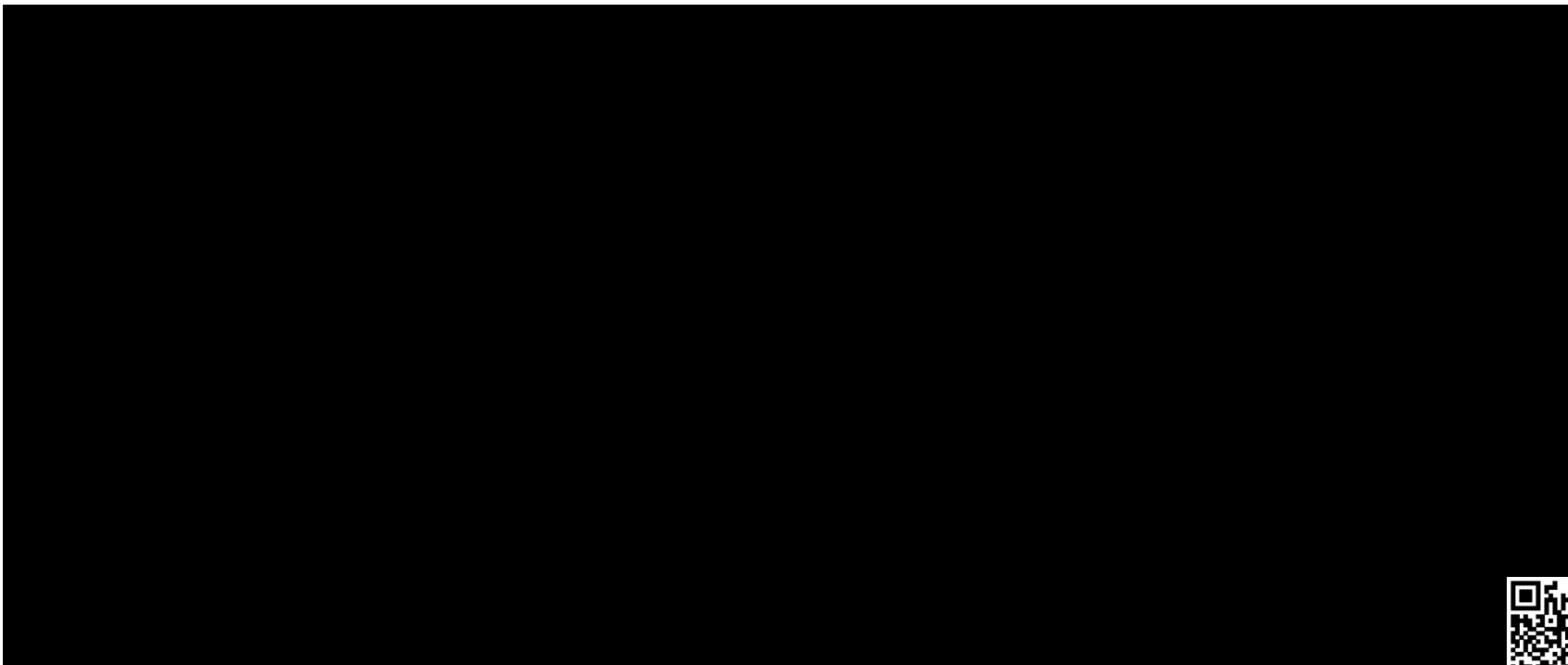


地震模拟



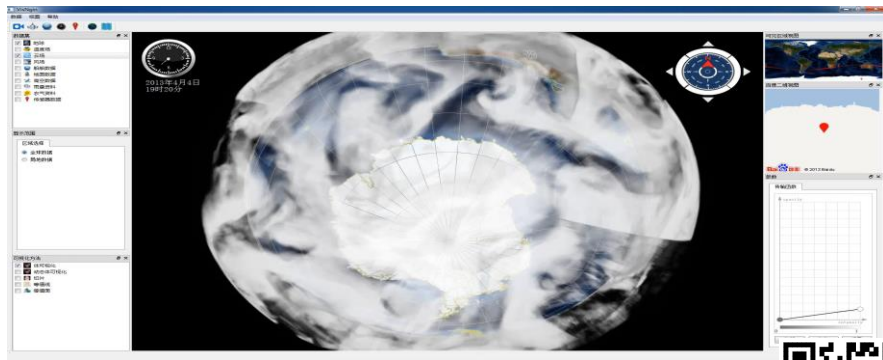
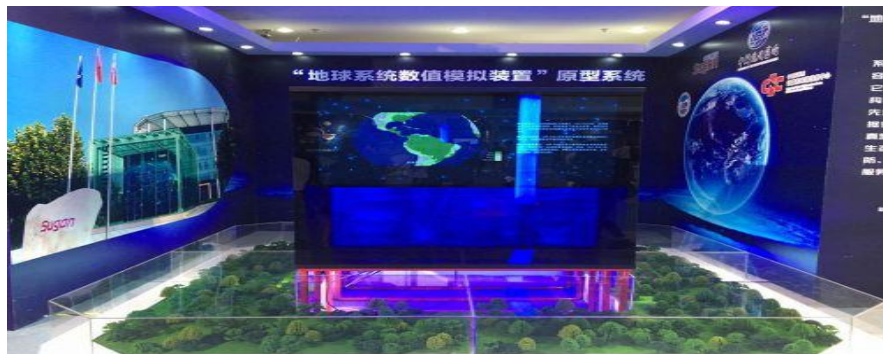
可视化重要应用：大科学

可视化成为基础自然科学研究的**必要手段**，是科学大数据发展的**必需**



“地球系统数值模拟装置”

国家十三五重大科学装置项目，
拟投资13亿，其中可视化部分
7000万。



国家卫星气象中心全球大气数据可视化平台
(浙江大学)



扫码观看大会视频



如何构建 大自然之美



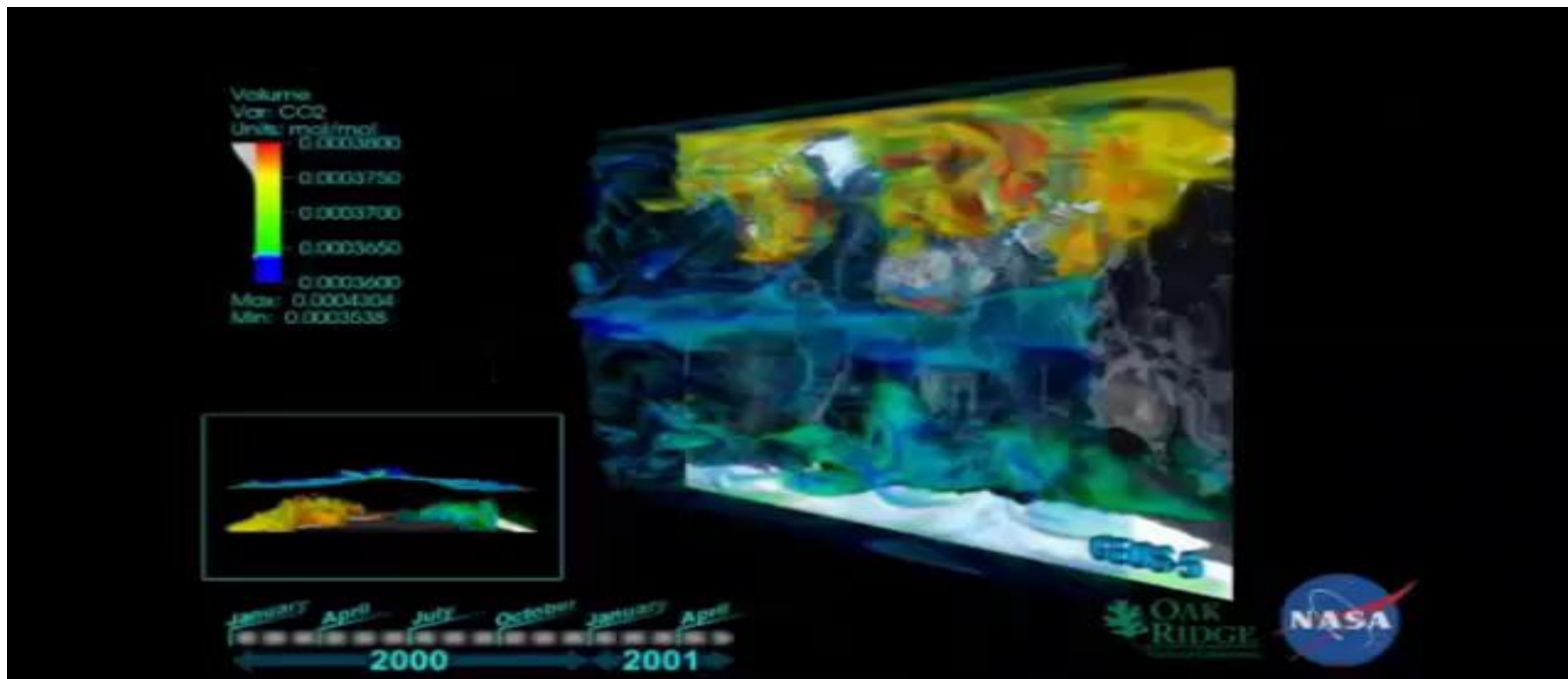
Visualization of Electron-Scale Turbulence in Strongly-Shaped Fusion Plasma

UC DAVIS

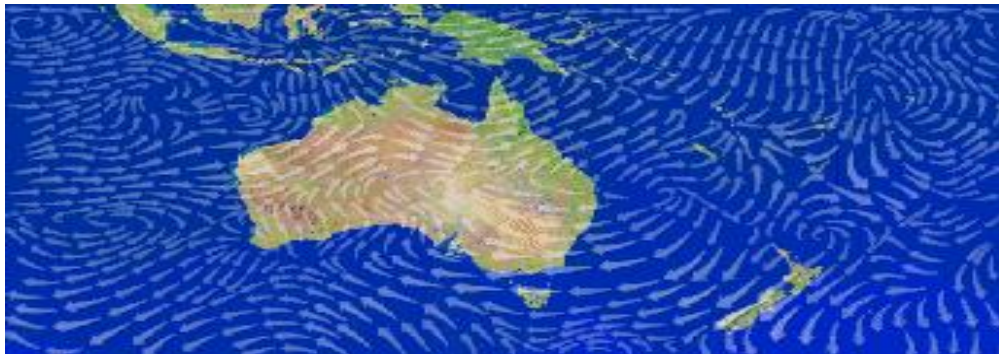
UltraVis
SciDAC program for advanced simulation



扫码观看大会视频

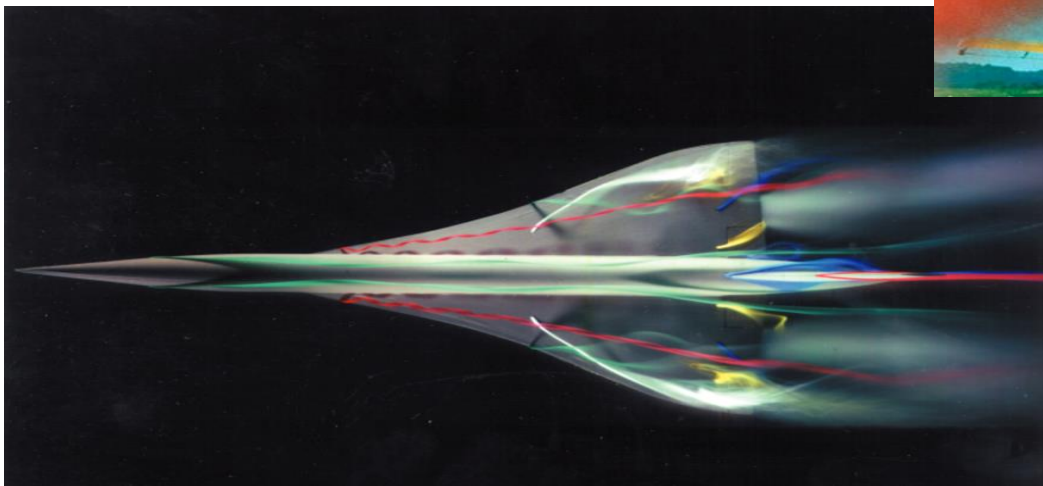


- 数据：向量方向、大小



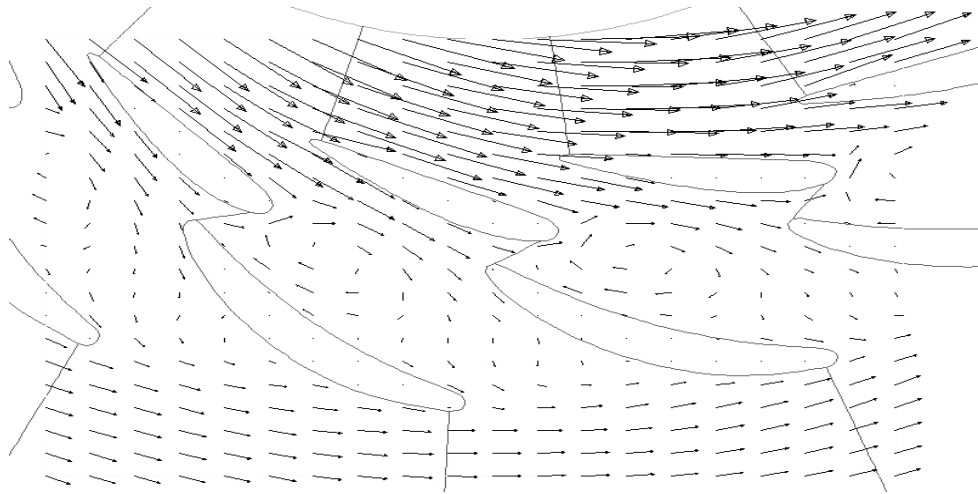
- 可视化目标：
 - 展示场的导向趋势信息
 - 表达场中的模式

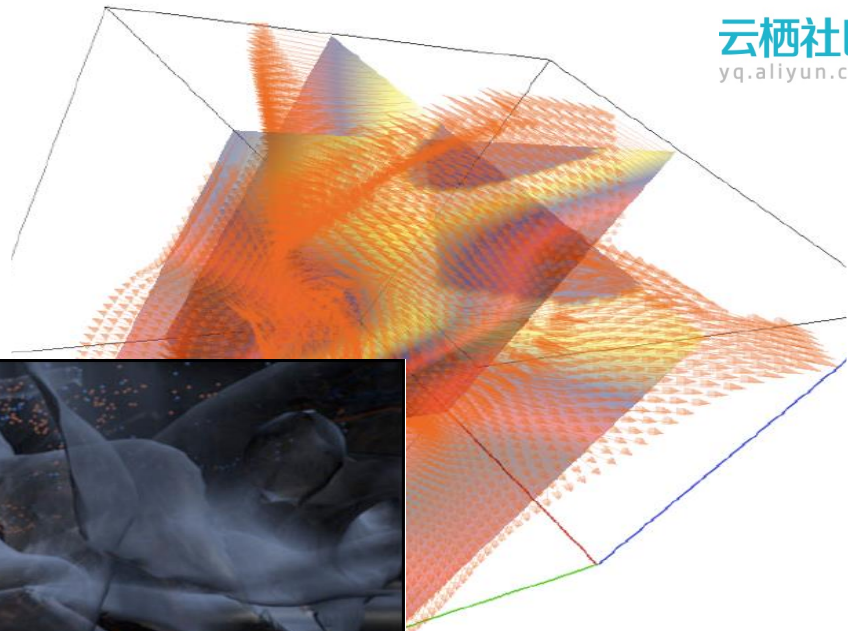
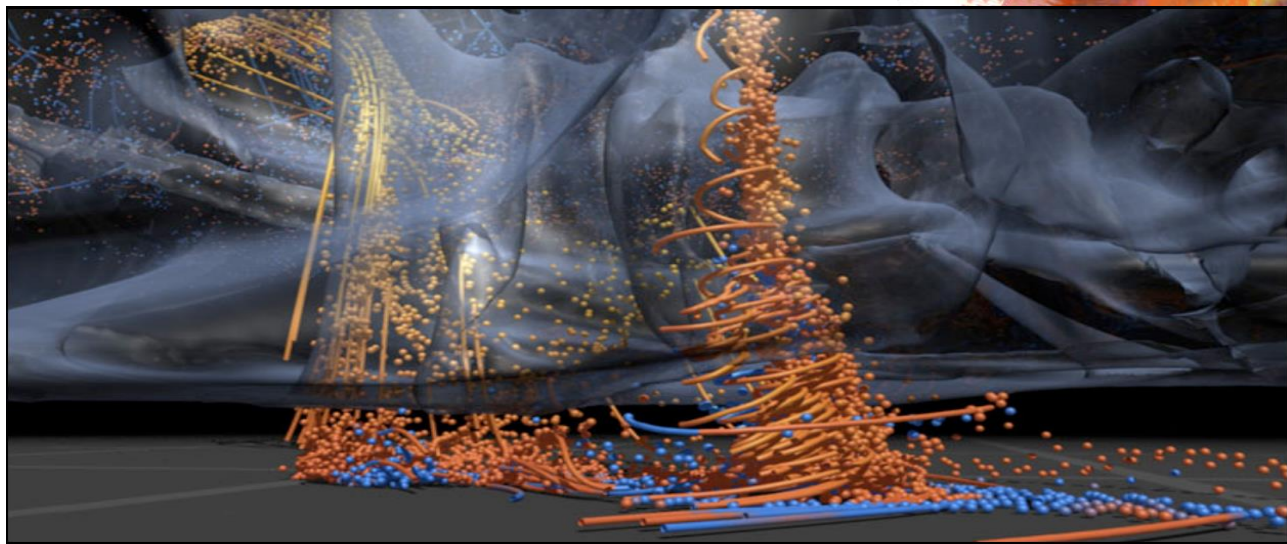




• 符号

- 线条 (hedge hogs)
- 箭头
- 方向标志符

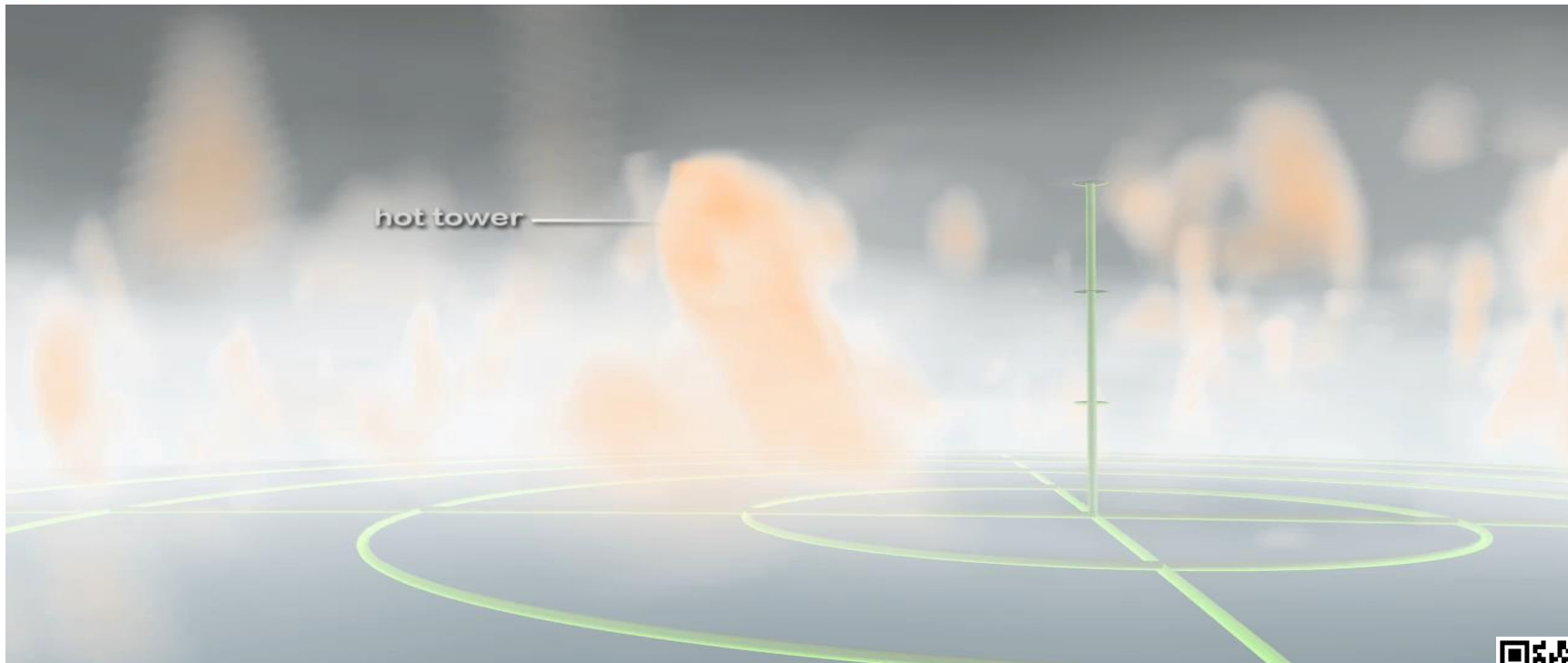




cantara



扫码观看大会视频



- 流线 (streamline) , 迹线 (pathline) , 时间线 (timeline) , 纹线 (streakline)
- 条带 (ribbons)
- 管道和气泡
- 流面 (stream surfaces)
- 流体 (stream volumes)

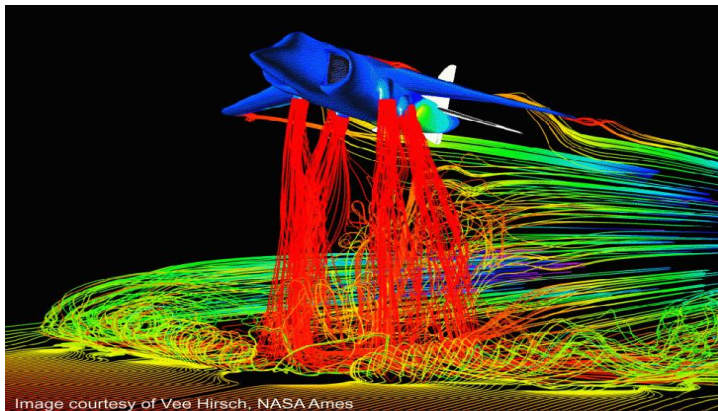
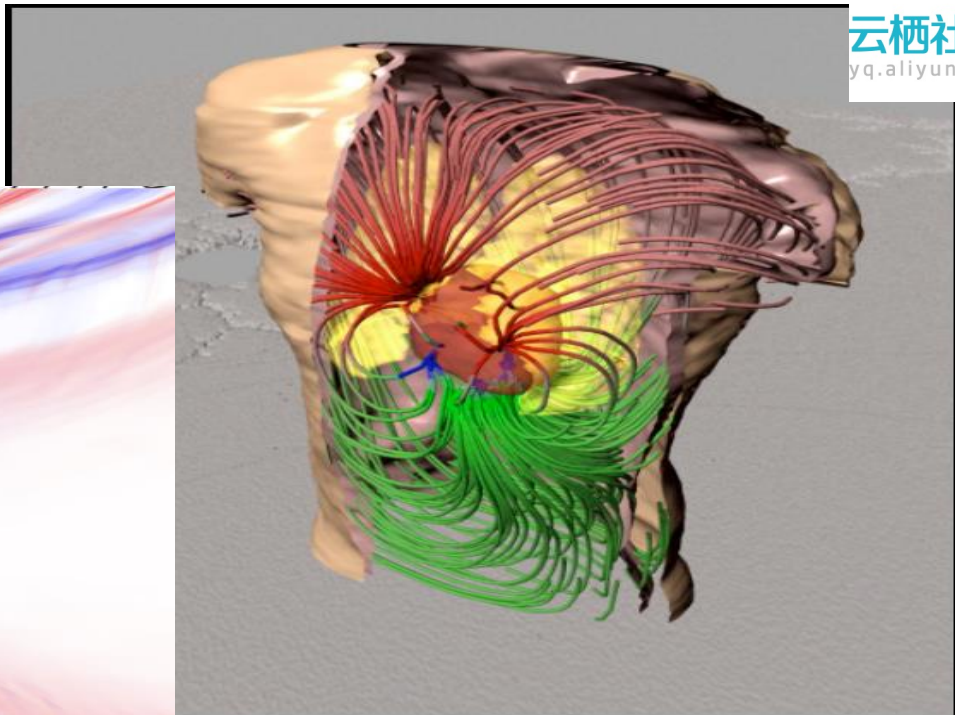
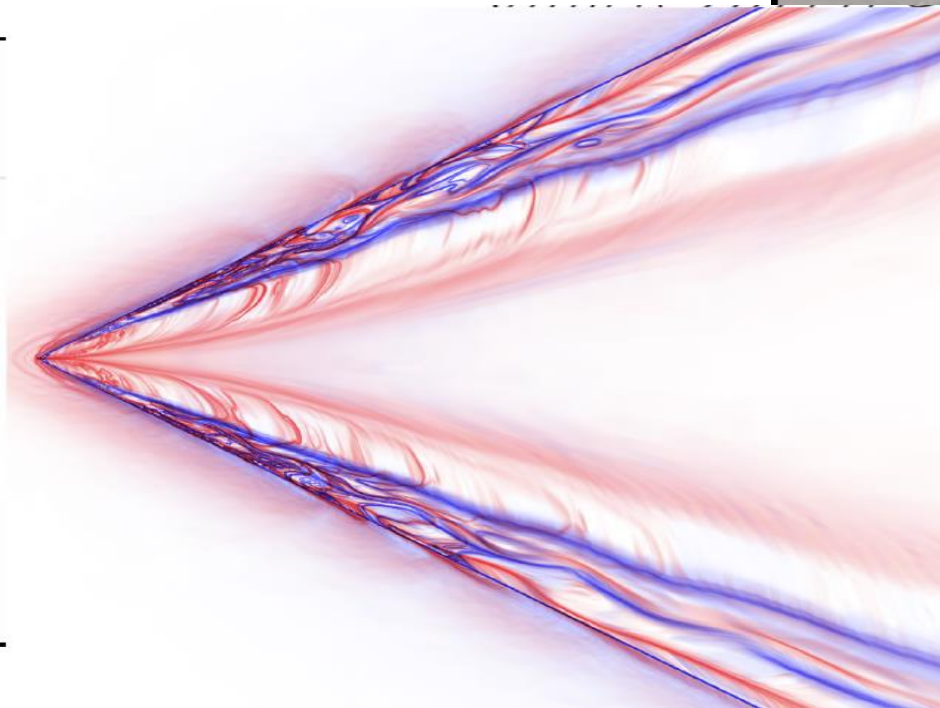


Image courtesy of Vee Hirsch, NASA Ames





红线：迹线pathline
绿线：纹线streakline
黑线：流线streamline



Constructing Streak Surfaces for 3D Unsteady Vector Fields

Tony McLoughlin, Robert S. Laramée and Eugene Zhang



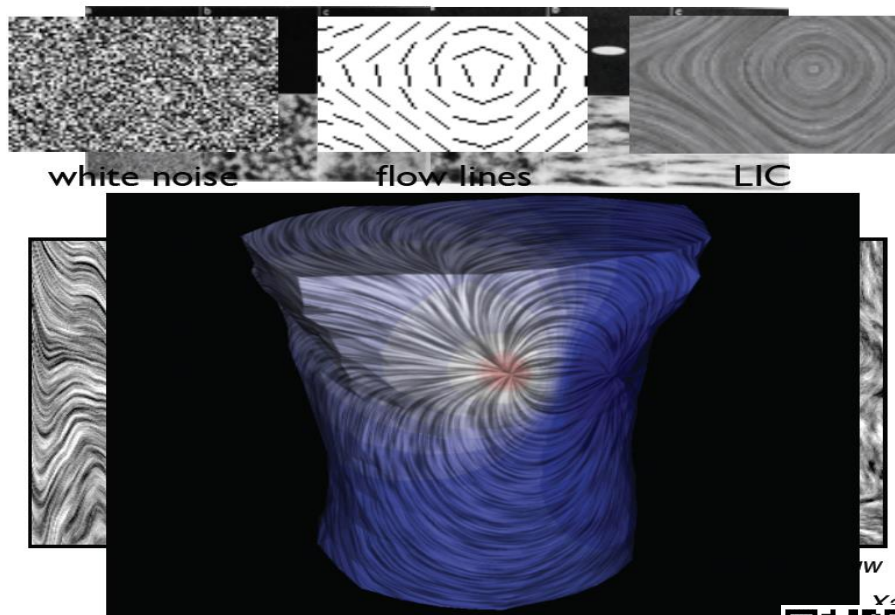
Swansea University
Prifysgol Abertawe

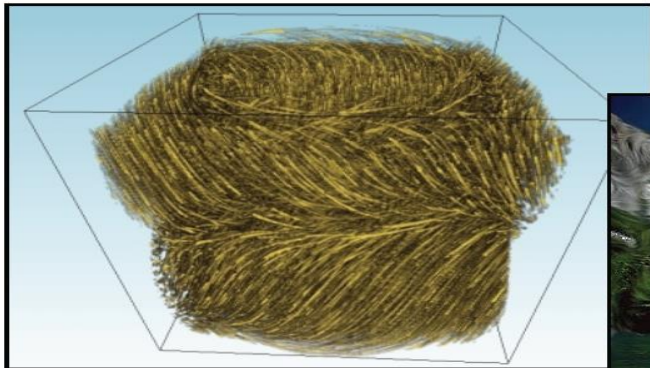


Supplementary video



- 点噪音
 - 带有随机噪声的卷积模糊点
- 线卷积积分 (line integral convolution, LIC)
 - 将白噪声与流畅进行卷积





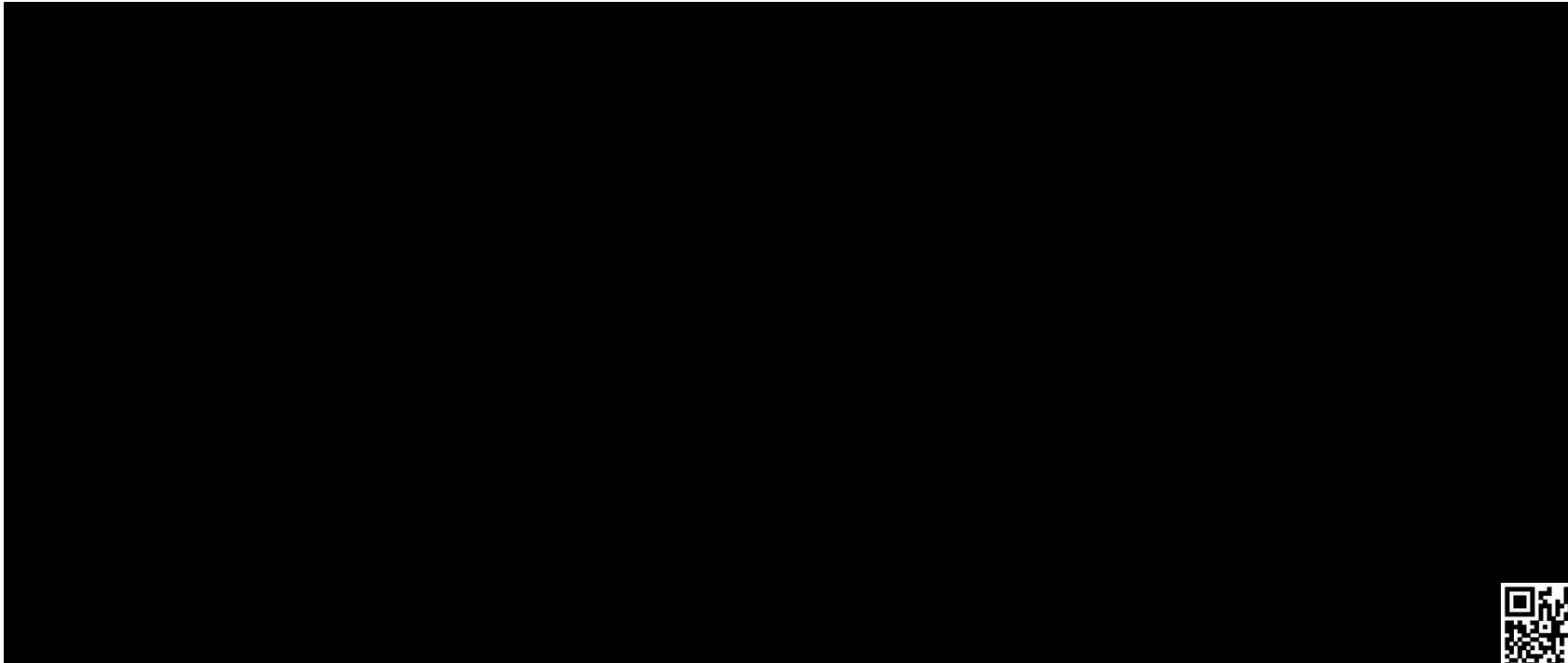
Anders Helgeland



Gui-Shi Li







海洋

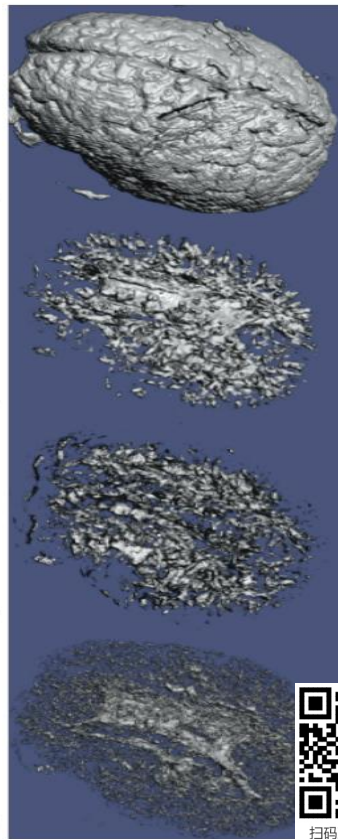
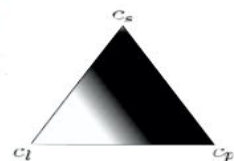
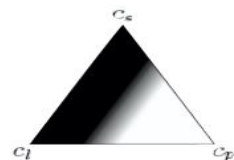
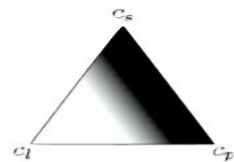
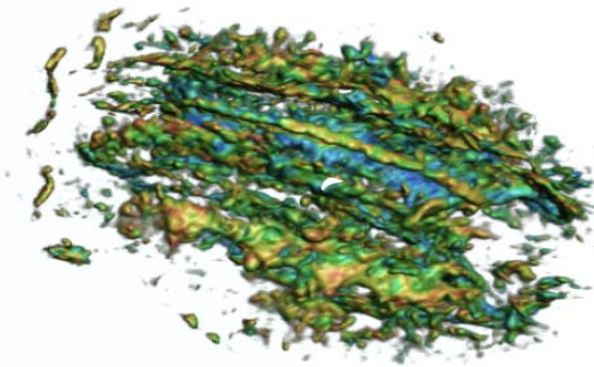
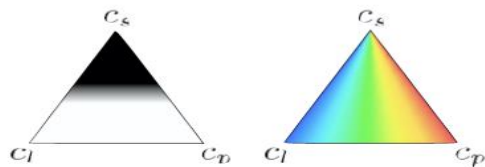
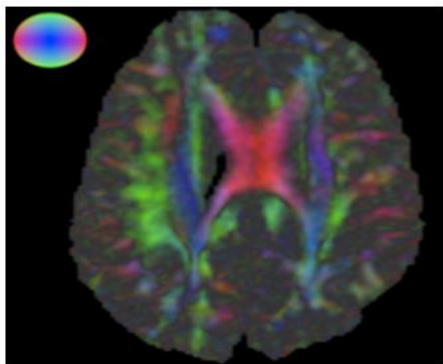


扫码观看大会视频

- 每个数据点的值为n维矩阵
 - 三维数据：3x3x3张量
- 描述数据在数据点邻域上如何变化
 - 扫描设备：人脑中水的弥散
 - 模拟：压力，张力



Color Encoding

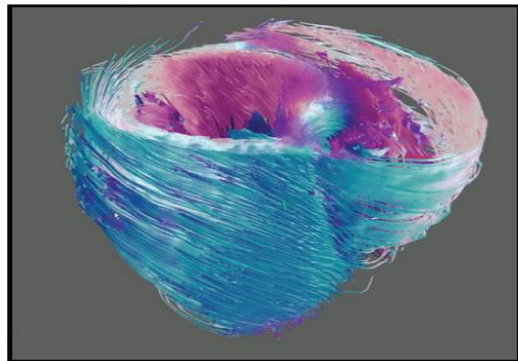


扫码观看大会视频

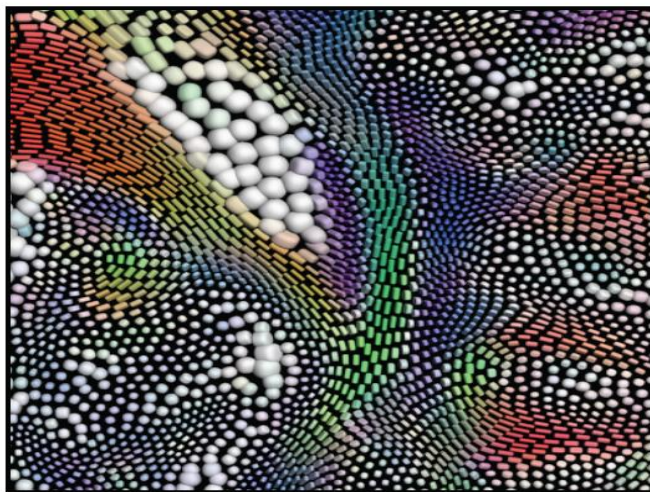
Steams and Glyphs



CMIV



Leonid Zhukov



Gordon Kindlmann



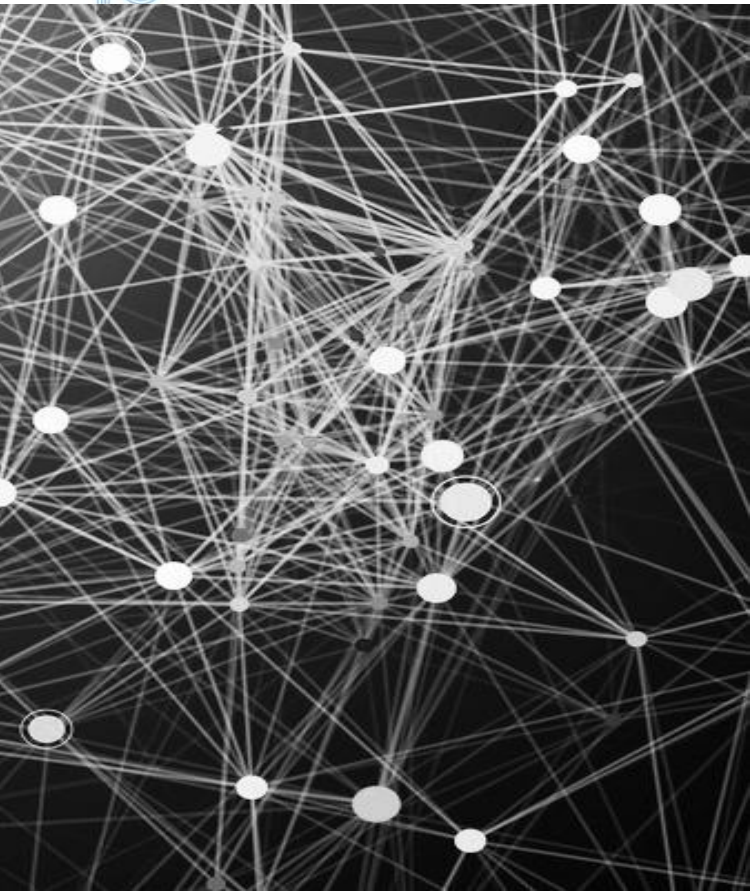
扫码观看大会视频

图标

Asymmetric Tensor Field Visualization for Surfaces

Guoning Chen, Darrel Palke, Zhongzang Lin,
Harry Yeh, Paul Vincent, Robert S. Laramée, and Eugene Zhang





大数据可视化 的商业价值





TRIFACTA
www.trifacta.com

探索

结构化

清洗

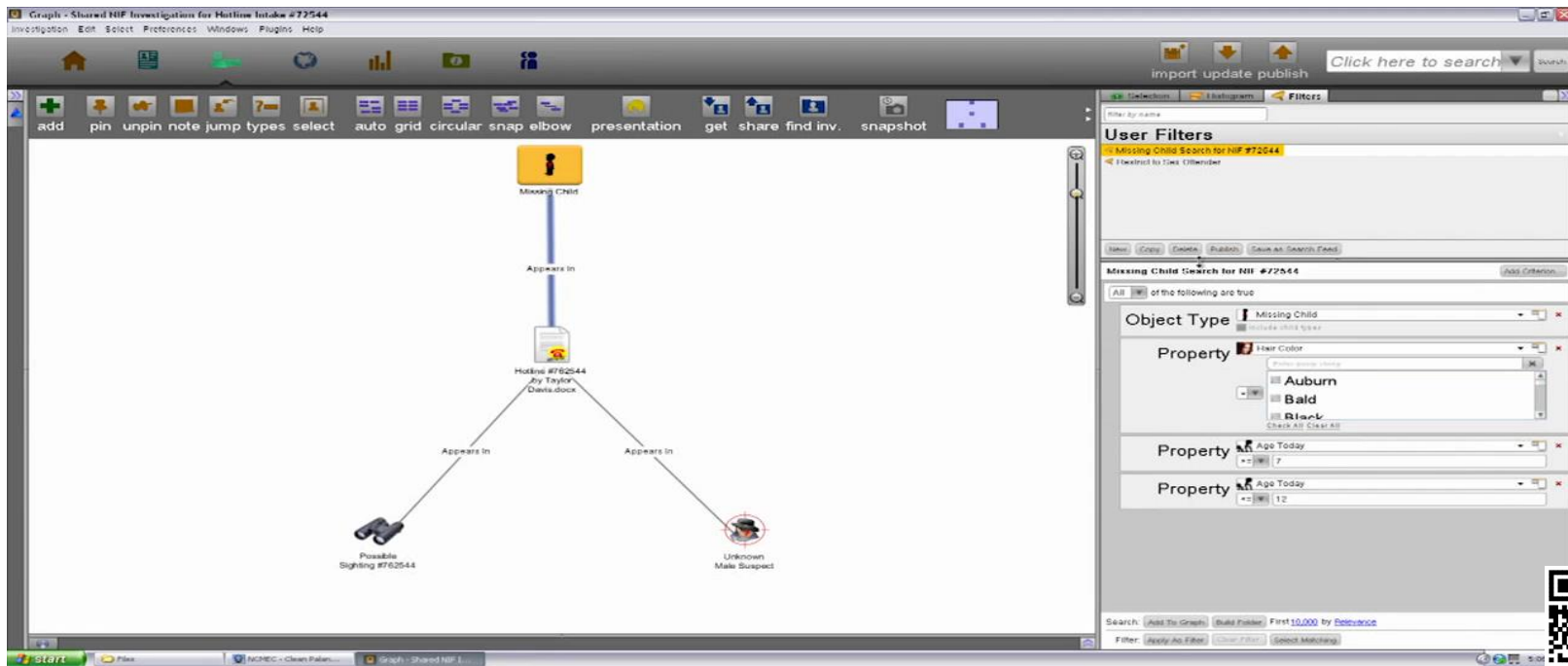
丰富

验证

发布

The screenshot displays the Trifacta user interface. On the left, a 'Job Results' panel shows a 94% valid rate. The main workspace shows a data table with columns like 'created_date' and 'friends_count'. A central 'Export Results' dialog is open, showing options to export data in JSON, CSV, or Parquet format to a specified database and table. The dialog also displays the file size (8.61MB) and the number of rows (108,545). On the right, another 'Job Results' panel shows a 95% valid rate and a 0% mismatched rate. A QR code is visible in the bottom right corner.

Palantir: 帮助美国中情局定位本拉登



博世智能工厂数据可视化分析

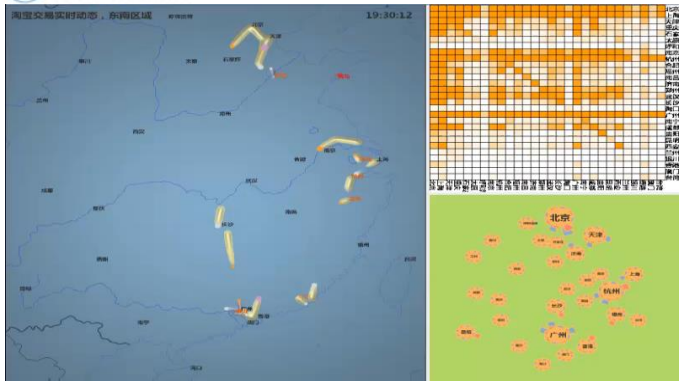


扫码观看大会视频

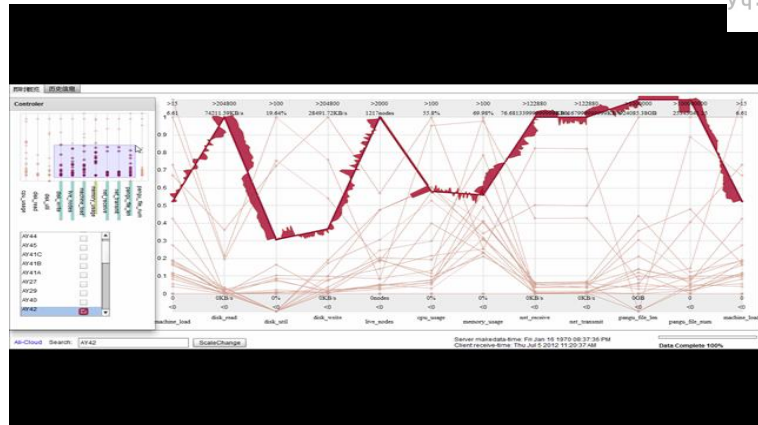
Case one:
The egocentric relations of a microblog user

基于CPS数据的个人社交关系可视分析（浙江大学）





城市间电子商务物流可视化



阿里云监控日志的可视化

MUBE: A Visual Analytics Approach to Exploring Web Multi-User Behavior Data

基于电子交易数据的异常交易可视分析

电子商务交易的关联规则可视分析

扫码观看大会视频

NBA Games Viewer



20 The
16 Computing
Conference
THANKS

陈为

chenwei@cad.zju.edu.cn
浙江大学CAD&CG国家重点实验室

