Visualization Curriculum Panel:

Experiences in Teaching Visualization at the University of Stuttgart

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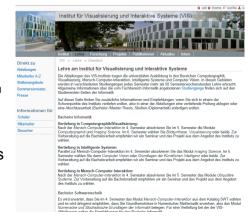University of Stuttgart
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My Background

- Professor of computer science (visualization) at the University of Stuttgart

- Dean of studies in computer science and software engineering
  - Curriculum and program development
  - Bologna process: re-organizing in BSc and MSc programs

Teaching Portfolio

- Courses
  - Computer graphics (introduction)
  - Geometric modeling and animation
  - Image synthesis
  - (Scientific) visualization
  - Information visualization
  - Visual computing
  - Introduction to visualization in science and engineering
- Seminars
- Large-scale team projects
- Lab courses

Incremental Updates

- Complement course material with new techniques from scientific publications

- Update APIs and programming environments
  - Example: shader programming

- Improving visualization projects
  - Often topics from information visualization
  - C# or other programming languages

Expanding the Topics Covered

- Information visualization and visual analytics
- Refocusing the course on scientific visualization
- Visual computing

Outreach

- Introduction to visualization in science and engineering
- For non-CS majors
  - Affinity to technical or science topics
  - Some, but often limited programming experience
- Room for practical work
  - Heavily tool-based

Introduction to Visualization in Science and Engineering

Chapter 1:
Introduction and Examples

visus

Visualization Research Center
University of Stuttgart

Filip Sadlo

Structural Changes

- Courses:
  - Imaging science (advanced BSc level)
  - Theoretical and methodological foundations of visual computing (MSc level)
- Goals:
  - Common basis for computer graphics, visualization, and computer vision
  - Complement typical mathematical and theoretical education of computer science students

Challenges

- Growing need for background knowledge from diverse fields
  - Mathematics
  - Computer science
  - HCI, psychology
  - Application background
- Expand the target group
  - Non-CS students
  - Programming skills?