

## Ethics & Privacy

### Readings for Today:

- "Agile Ethics for Massified Research and Visualization", Neuhaus & Webmoor, Information, Communication & Society 2012.
- "Adaptive Privacy-Preserving Visualization Using Parallel Coordinates", Dasgupta & Kosara, TVCG 2011.

### Readings for Today:

- Society of Professional Journalists' Code of Ethics
- Visual.ly's Code of Ethics for Data Visualization Professionals

### Institutional Review Board (IRB)

- Privacy, Confidentiality, Anonymity, Informed Consent
- Reduce risk (physical/mental/privacy) to the participants engaged in research

www.rpi.edu/research/office/irb/index.html

RENSSELAER POLYTECHNIC INSTITUTE - TROY, NY, USA

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why not change the world?

Office for Research

Faculty Interest Inventory

Constellations

Invention

Centers

Platforms & Facilities

Student Research

Research Compliance

Responsible Conduct of Research

- Institutional Review Board (IRB)
- Institutional Animal Care and Use Committee

Biotechnology and the Life Sciences

Energy and the Environment

Computational Science and Engineering

Nanotechnology and Advanced Materials

Experimental Media and the Arts

### Institutional Review Board (IRB)

Rensselaer Polytechnic Institute is committed to protecting the rights and welfare of human subjects of research conducted on the campus or sponsored by the Institute.

Rensselaer subscribes to the basic ethical principles that underlie the conduct of biomedical and behavioral research involving human subjects as set forth in the Belmont Report, and in accordance with Title 45, Code of Federal Regulations, Part 46.

The Institutional Review Board (IRB) has the responsibility and authority to review, approve, disapprove, or require changes in research activities involving human subjects. This policy applies to all faculty, staff, and student projects, regardless of whether the project is funded externally, internally, or receives no funding support.

Researchers should refer to Rensselaer's [Submissions for Human Subjects Research](#) to determine whether or not their research is indeed human subjects research, and/or if their research satisfies the requirements for [expedited review](#) by the IRB.

**IRB Training Requirements**

As federally mandated and required by the Rensselaer IRB, all investigators must complete a self-study course in human subject protection via the CITI Training Program. Each investigator on a research project involving human subjects is required

Direct all inquiries to [irb@rpi.edu](mailto:irb@rpi.edu)

Rensselaer Resources for Human Subjects Research

- IRB Proposal Template
- IRB Renewal/Closure Form

Consent Form Templates:

- Faculty
- Student

Additional Resources

- CITI Training Programs
- Decision Chart
- NIH Office of Human Subjects Research

### Informed Consent

- Do you carefully read every document you sign? Every "agree to terms" button you click?
- Data can be taken out of context, used in ways other than intended
- Previously: required a team of researchers to gather data
- Now: a single person can do it alone - lost informal peer consultation of ethics concerns

### Interesting Tidbits

- Internet is an ocean of data
- Research results poured back into ocean of data
- Surveillance: Shopping malls are private spaces, but made to feel like public spaces
- File/log planned data collections in advance (pre-planning required, data more precious)
- Researchers should make themselves equally public

### Privacy & Visualization

- Most visualization computation *assumes* unrestricted access to data
- How do we do this computation with partial information?
- How do you design hardware/software system to ensure data security?

### What data has privacy concerns?

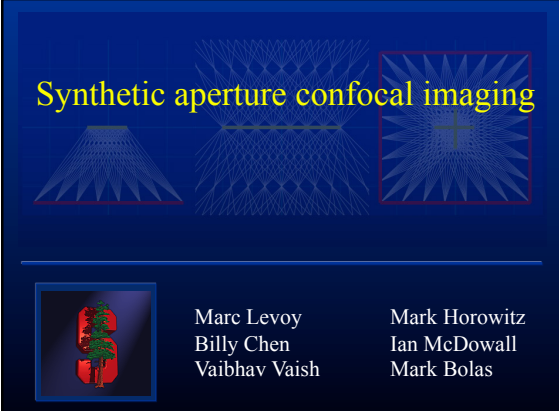
- Corporate secrets
- Health records
- Personal finances
- Personal location

### Who would potentially benefit from access to this Data? (why is a grey area?)

- Scientific discovery
- Improve healthcare

### What is sufficient to anonymize data?

- Remove explicit identifiers
- Small datasets cause problems
- Quasi identifiers
- What are the sensitive attributes
- Sanitize data on the fly, constraining the interaction
- Assume data holder is aware of data sensitivity (*and appropriately concerned*)




Synthetic aperture confocal imaging

Marc Levoy  
Billy Chen  
Vaibhav Vaish

Mark Horowitz  
Ian McDowall  
Mark Bolas

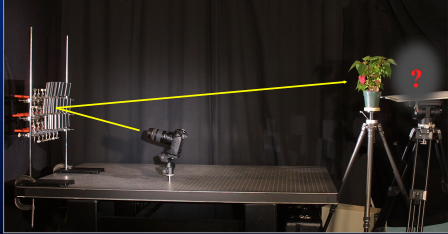
### Stanford Multi-Camera Array

[Wilburn 2002]

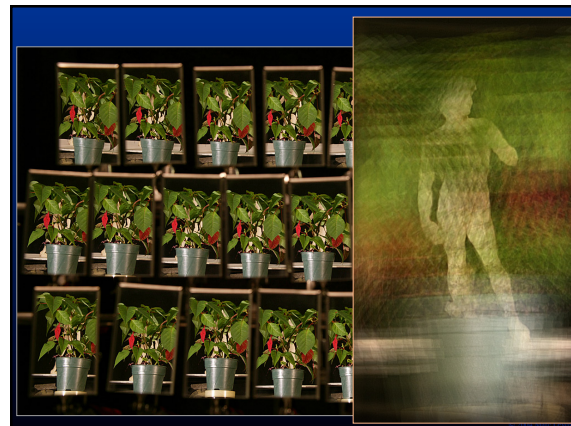


- 640 × 480 pixels × 30fps × 128 cameras
- synchronized timing
- continuous video streaming
- flexible physical arrangement

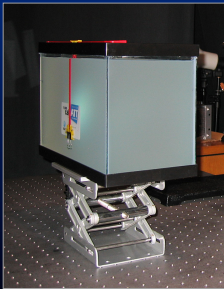
### Synthetic aperture photography using an array of mirrors



- 11-megapixel camera
- 22 planar mirrors




### Confocal imaging in scattering media




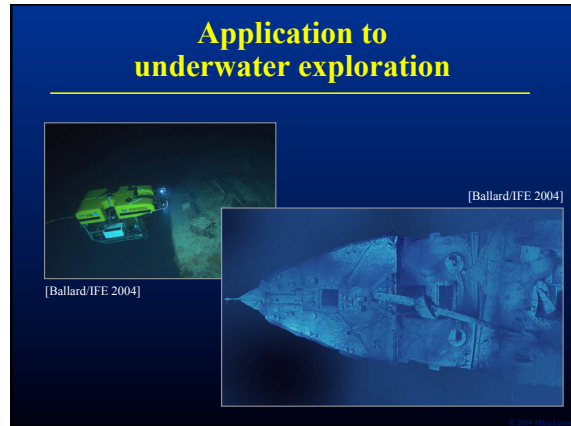
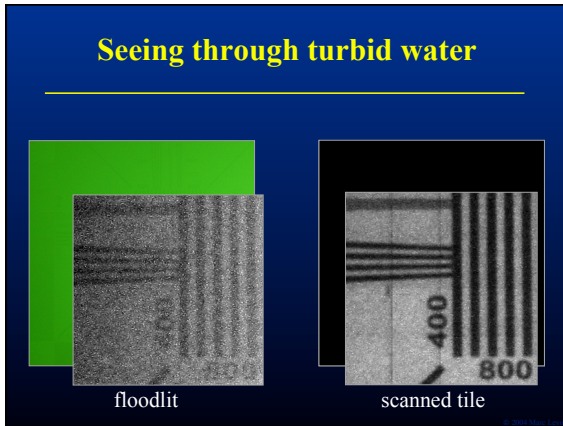
- small tank
  - too short for attenuation
  - lit by internal reflections

### Experiments in a large water tank



- stray light limits performance
- one projector suffices if no occluders





#### In Class Exercise

- In a team of 2... someone you haven't worked with yet!
- Inspired by a classmates homework 6 submission (or not)
- Script a skit or debate revealing both sides of a privacy/security/ethics issue related to data and or visualization
- Can be a personal anecdote, a worst-case scenario, a legal court case
- Related to business, health, personal privacy, ...

#### Homework Assignment 7: Interaction & User Interfaces

- User Interface Design for Data Exploration
- Complex user interaction
- Performance efficiency
- Focus: Visualization Execution (secondary)  
Visualization Design (secondary)

Teamwork: **strongly encouraged!!**  
(work with someone new!)  
Revisit previous assignment ideas: *encouraged!*

#### Readings for Next Week:

- "Focus Plus Context Screens: Combining Display Technology with Visualization Techniques", Baudisch, Good, & Stewart, UIST 2001

#### Readings for Next Week:

- "QSplat: A Multiresolution Point Rendering System for Large Meshes", Rusinkiewicz & Levoy,
- SIGGRAPH 2000