Craft of Research

Week 7: Practice Poster Presentations

Instructor: Yvonne Farah
Practice Presentation

• 3 minute elevator speeches with a draft of project (one slide)
• All group members must present
• Feedback given
Why Choose a Poster Presentation?

- Provides a visual summary of research
- Engages with a diverse audience
- Facilitates networking and collaboration opportunities
- Offers a chance to receive feedback and insights from peers and experts
Key Elements of an Effective Poster Presentation:

- Title
- Introduction
- Methods
- Results
- Discussion
- Conclusion and Future Directions
Title:

- Clear and concise, conveying the main idea of the research
- Large and easily readable font
Introduction

• Provides background information and context for the research
• Includes research objectives and hypotheses
Methods:

- Describes the research design, data collection, and analysis methods
- Use visuals like diagrams, charts, or tables to present complex information
Results:

- Presents the key findings of the research
- Use graphs, charts, or images to illustrate the results
- Highlight the most important data points
Discussion:

• Analyzes and interprets the results
• Relates the findings to existing literature or theories
• Discusses the implications and significance of the research
Conclusion and Future Directions:

Summarizes the main findings and their implications

- Suggests potential avenues for future research
Design Tips:

- Use a clean and organized layout
- Choose an appropriate color scheme
- Incorporate visuals, but avoid overcrowding the poster
- Ensure text is legible from a reasonable distance
Miro for Poster Presentation Layout

- Provides a virtual canvas for easy poster creation and collaboration.
- Offers a range of tools and features for visual appeal and engagement.
- Facilitates seamless collaboration with team members or classmates.
Engaging Your Audience:

• Practice a concise and engaging oral presentation
• Use visuals strategically to complement your speech
• Encourage questions and discussions
• Be prepared to summarize your research in a brief elevator pitch
Artificial Intelligence Bias Regulation Aggregator
Michele Chang, Maryam Dawood, Hannah Gonzalez, Kaitlin Blacker
Mentors: Hoda Heidari and Anna Katsavounidou

Background
- The US government has a divided/diverse approach to AI regulation, with some states having enacted their own laws and regulations, and others limiting or prohibiting AI-related activities.
- AI-based tools are often prone to various biases, including racial, gender, and socio-economic biases.
- State and federal agencies are actively working to limit algorithmic bias.

Methods
- Expanding the current survey, including additional states, to provide a more comprehensive overview of the bias regulation landscape.
- Conducting interviews with key stakeholders, including policymakers, industry experts, and civil rights groups, to gain insights into the challenges and solutions.
- Analyzing existing AI-related regulations and identifying gaps and inconsistencies.

Future Experiments
- Comparing the effectiveness of different regulatory approaches, focusing on states with similar demographics.
- Examining the impact of AI-related regulations on employment and economic growth.

Data Collection
- Identifying key AI-related regulations in each state, including laws, ordinances, and executive orders.
- Reviewing court cases and other legal documents to identify relevant regulations.
- Surveying AI industry stakeholders, including companies and research institutions, to gather insights on the impact of regulations.

Background
- Fibroblasts are connective tissue cells that play a crucial role in wound healing, scar formation, and tissue remodeling.
- Myofibroblasts are a specialized form of fibroblasts that are activated in response to tissue injury, leading to the formation of scars.
- The differentiation of fibroblasts into myofibroblasts is a complex process that involves changes in gene expression and cellular behavior.

Results
- We found that the addition of TGF-β increases the proportion of myofibroblasts in fibroblast differentiation cultures.
- Myofibroblasts cultured with TGF-β showed a significant increase in the expression of alpha-smooth muscle actin (α-SMA), a marker of myofibroblast activation.
- TGF-β mimics the effect of transforming growth factor β (TGF-β), which is involved in fibroblast activation.

Materials and Methods
- Primary human fibroblasts were isolated from skin biopsies and cultured in standard conditions.
- TGF-β was added to the culture medium to induce fibroblast activation.
- Myofibroblast markers, such as α-SMA, were measured using immunofluorescence and Western blot analysis.

Conclusion
- Our findings suggest that TGF-β plays a critical role in the activation of fibroblasts into myofibroblasts, which may have implications for the development of fibrosis and wound healing.
- Further studies are needed to understand the mechanisms of TGF-β-induced fibroblast activation and to develop targeted therapies for fibrotic diseases.
Measuring Tradeoffs In 3D Scene Capture for Telepresence
Marina Seheon, Grace Jung, Wendy Chen, Googie Nelson
Mentors: Tae Jin, Mohit Desai, Sinn Seo, Hannah, Anthony Rows

Motivation
- 3D video allows a viewer to explore a scene freely.
- Supports AR and VR multimedia.

Challenges
- 3D scene data requires significantly more computing and streaming resources than 2D images.
- Determining optimal parameters for best performance across latency and bandwidth results.

Results
- As the mesh decimation increases, mesh bandwidth and latency increase.
- As the mesh voxel size increases, mesh latency decreases.
- Mesh geometry and texture map streaming strategy is a practical alternative to existing strategies (e.g., sending point cloud or RGB-D data).

Future Work
Make picture look better

Carnegie Mellon University
School of Computer Science

Designing Smart Home Security Systems Without Compromising Women’s Privacy in Sub-Saharan Africa
By: Jessi Czerkies, Karina LaRubbio, Jhaveri Pai, Chinat Yu
Mentored By: Hope Chidziciswano

Introduction
- Smart home security systems are popular in the U.S.
- Implementation in Sub-Saharan Africa creates concerns about women’s privacy in a patriarchal society such as Mali.
- Users may abuse security systems to monitor women.

Problem Statement
Women need to protect household property without compromising personal privacy.

Objective
Design a smart home security system that protects African families while respecting the privacy of women.

Data and Methods
User studies were conducted in communities in Hampa and Malan to explore impact of security systems.

- Technology profile daylight vs. 2D households in the community.
- 25 households in total.
- 23 women in interviews, 24 women participated in focus group discussions/design sessions.

Results
- Secured Compound Layout

- Compound includes multiple homes and extended family.
- Collective security provided through network devices and centralized alarm.

Privacy-Consious Security System
Smart Wall Plug Adapter (1)

- Motion sensor is built-in.
- Alerts community alarm system via Bluetooth.
- Physical task with toggle to activate adapter.

Future Work
- Create low-fidelity security system prototype.
- Evaluate system within a Malian community.
- Collect user feedback to iterate on design.

Carnegie Mellon University
School of Computer Science
Poster Reminders

• Note
  • Dimension: 4 X 3 feet
  • Due: Monday, July 30th
  • Remember to use NSF acknowledgment with the latest grant number from our REU website. (Funded by NSF Award Number #2244586)
Thank you!