Poster Design
Today’s Plan

• Describe content of a poster.
• Describe design techniques to emphasize and support poster content.
A poster should...

- Communicate
- Promote
- Inform
- Engage

Your poster should make people stop, read, think, and talk to you!
Essential Hints

• Poster size: know before you start!
• White space is your friend!
• Make text large!
• Good design makes your poster professional!
Poster Content

Content depends upon your research or project.
Creators’ Content vs. Readers’ Wants

- Abstract
- Institution(s)
- Detailed methods
- Funding sources
- References
- Website

- Title
- Author(s)
- Data / Results
- Purpose
- Take-home message

Purpose

Title

Abstract

Institution(s)

Detailed methods

Funding sources

References

Website

Data / Results

Purpose

Take-home message
Required Content

• Title
• Author(s)
• Affiliation / institution
Affiliations: Branding

• Include your institution’s logo.
  • Marketing or communications offices often have guidelines and downloads.
    • Metropolitan State University of Denver
      msudenver.edu/brandcentral/
    • University of Colorado Denver
      www1.ucdenver.edu/offices/ucomm
    • Community College of Denver
      ccd.edu/administration/non-academic-departments/college-advancement/working-marketing
Content for a Research Study

• Introduction
• Methods and Materials
• Results
• Conclusion / Discussion
• References (if used)
• Acknowledgments (optional)
Multi-task Motion Strategies for Metamorphic Robots

1. Introduction
We introduce a novel method for the automatic discovery of motion strategies for metamorphic robotics. We show how this method can be used to find more natural gaits for typical robot morphologies. Finally, we employ the method to find motion strategies for different classes of morphologies and use the results to compare each class ability to perform a range of tasks.

2. Motivation
Reconfigurable robots are becoming an interesting medium, considered as being well suited to long-term, real scenarios where more specialized morphologies may turn out to be insufficient. However, there is currently no general theory underlying motion synthesis for such robots, especially in scenarios involving multiple tasks [1]. Our highest level goal is to make a contribution in this direction.

3. Method
A specification language is presented (extension of [2]) which reduces the space of robot morphologies to one that is more likely to produce desirable robots. Inspired by recent findings in biology [3], our method exploits the specification language to identify spines (hierarchical groupings) of the motors. Control strategies for the morphologies were automatically found (using evolutionary algorithms) by optimising the spines’ parameters.

4. Results
Suprisingly good gaits were found for most morphologies after only 50 iterations of the genetic algorithm. The animals performed particularly well in the simpler tasks (walking and rotating), and at times directly mimicked the gaits seen in nature.

The snakes, for example, were found to use side-winding techniques typically employed by the horned rattlesnake. However, the need for hierarchical control structures became apparent in the larger animals. The insects, for example, performed poorly as the algorithms did not have any direct way of coordinating each leg's movements.

5. Conclusions
Further analysis of the results showed that correlations exist between the set of tasks the animals are trained to perform and the morphologies of the animals that excel at those tasks.

In particular, the simulations showed that starfish morphologies were consistently the strongest across the range of tasks (see graph above). This can lead to investigations into the suitability of starfish morphologies for future research in the field of robotics.

6. References
Content for an Event or Other Project

- Who
- What
- Where
- When
- Why
- How
- References (if used)
- Acknowledgements (optional)
Example: Content for a Project

Great Parchment Book Project
Conserving, digitally reconstructing, transcribing and publishing the manuscript known as the Great Parchment Book

The Manuscript
The Great Parchment Book of the Honourable The Irish Society is a major survey compiled in 1439 by a Commission instituted by Charles I of all the estates in Derry, Northern Ireland, manages by the City of London through the Irish Society and the London livery companies. Damaged in a fire at London’s Guildhall in 1786, it has been unavailable to researchers for over 200 years. The damaged manuscript has however remained part of the City of London’s collections held at London Metropolitan Archives (LMA reference CLA/04/HEMG02/018). As part of the commemorations of the 400th anniversary of the building of Derry’s city walls in 1613, it was decided to attempt to make the document available as a central point of the planned exhibition. Given the relative paucity of archival records for early modern Ireland, the manuscript should reveal key data about landholding and population in 17th-century Ulster.

The manuscript consists of 165 separate parchment membranes, all damaged in the fire. Uneven shrinkage and distortion has rendered much of the text illegible. Traditional conservation alone would not produce sufficient results to make the manuscript accessible or suitable for exhibition, the parchment being too shrivelled to be returned to a readable state. Much of the text is visible but distorted; following discussions with conservation and imaging experts, it was decided to flatten the parchment sheets as far as possible, and to use multi-modal digital imaging to gain legibility and enable digital access.

Conservation and Flattening
A partnership with the Department of Computer Science and the Centre for Digital Humanities at UCL, established a four-year EngD in the Virtual (Environments, Imaging and Visualisation) programme in September 2010 (jointly funded by the EPSRC and LMA) with the intention of developing software that will enable the manipulation (including virtual stretching and alignment) of digital images of the book rather than the object itself. The aim is to make the distorted text legible and ideally to reconstruct the manuscript digitally.

Conservation work on the membranes encompassed damage assessment and surface cleaning of text and dirt. Each membrane was then carefully humidified to avoid catalysing the degradation processes already occurring in the parchments. Once the sheets were moistened enough, they were gently pinned on a metal sheet with fibre-reinforced magnets to hold creases open during the drying process and left to dry under tension. This opened out areas of parchment where the curves could not reach the text. Once treated, the sheets were rehoused in purpose-made archival boxes.

Virtual Flattening Results
The virtual flattening procedure begins by generating a high resolution 3D model of each page from a set of images using multi-view-stereo and surface reconstruction algorithms. This 3D model can then be explored in an interactive application, which dynamically flattens local regions of the page as the user navigates over them. This region-by-region approach to flattening was demonstrated to circumvent many of the problems of global document flattening methods, which can introduce extra distortions when applied to such damaged manuscripts. The application also records the provenance of the 3D data by displaying the reconstruction side by side with the original images.

Transcription and Publication
A readable and exploitable version of the text was also prepared, comprising a searchable transcription and glossary of the manuscript. This element of the project received a grant from the Marc Fitch Fund towards the employment of a palaeographer who also encoded the text using TEI to capture structural and semantic information about the text. This enabled comprehensive searching of the document.

A team from UCL Computer Science and UCL Centre for Digital Humanities, led by Dr Tim Weyrich, worked with LMA to capture 50 to 60 high resolution images of each page. Kazim Pal, a PhD student working on the project, then built software to generate a 3D model which allowed viewing of the damaged pages at archival resolution. A key feature of the software is to dynamically flatten these models virtually on screen, allowing the contents of the book to be accessed more easily and without further handling of the document.

@LdnMetArchives

www.greatparchmentbook.org
Other Content Options

• Thematic
  • Group sections of your poster according to sub-themes

• Narrative
  • Tell a story about your topic; particularly useful for a specific event

• Questions and Answers
  • Summarize your main research questions and how you answered them
Content Activity

• In groups of 2-4 ...
  • Choose one of your research topics to create a poster using the cards.
  • Discuss why you would or wouldn’t use a card.
  • Decide where you would add images.
  • Some cards are absolutely necessary, but not all cards are necessary!

• You will tell the larger group why you selected the specific cards.
Design

Layout, Font, Text, Color, Image Resolution, Whitespace
Design should...

• never distract from your content.
  • In fact, good design is often “invisible”!
• help you naturally separate content.
• emphasize important information.
• attract viewers.
Layout

• Content dictates your layout!
• Use a template.
• At least 1 inch margins around edges of the poster.
• “Direct” readers through your content.
  • Left to right, up, down
  • Use numbers, letters, or arrows
  • Readers should be able to read your poster like a map
Layout Sketches
Project Baseline
A living genome bank to capture evolution in action

www.baselineseedsbank.org

 Anthropogenic Change
 is happening faster than ever, affecting all species. Tracking changes, understanding, and restoring damaged ecosystems takes time and resources. Project Baseline is a collaborative initiative that involves scientists from around the world to collect, describe, and analyze plant and animal species to develop, preserve, and find solutions. These efforts are essential to tracking the effects of climate change and other forms of environmental damage, such as pollution and invasive species. The initiative also focuses on the identification of new species and the documentation of their interactions, providing a comprehensive understanding of the natural world.

Species Selection
- Create a Project Baseline plan to gather data and develop a process to identify species at risk for extinction.
- Develop a list of key species currently under evaluation for genetic diversity.
- Compile a list of species that are vulnerable to climate change, pollution, and other environmental factors.
- Identify species that are best suited for Project Baseline research.
- Establish a team of experts to focus on specific species or regions.
- Ensure that all collected species are safely stored and preserved.

Site Selection Criteria
- Identify sites that are representative of specific ecosystems.
- Ensure that sites are accessible and have sufficient resources for research.
- Select sites that are representative of the diversity of the region.
- Ensure that sites are safe and secure for research.
- Choose sites that are in danger of destruction or loss.

Drought and Germination
- Drought stress results in reduced germination rates of new seeds.
- During drought, plant species may die.
- Invasive species may thrive.
- Strong selection pressures due to climate change, even in 1 year.
- Preventing natural seed diversity for future evolutionary studies is imperative.

Future Project Goals
are to collect and bank nearly 12,000,000 seeds in the next five years. These seeds will be used to create a new plant species bank that can be used to restore damaged ecosystems worldwide. This plan will involve the collection of seeds from target species and associated species that occur in the same area. In addition, we are creating a database to track environmental data and the status of the collected species. The database will be useful to help track the species and their environmental conditions.

You Can Help
- Make Project Baseline a success.
- Donate to support Project Baseline.
- Help collect data on species diversity.
- Support research on climate change.

www.baselineseedsbank.org
Layout Example 2

Why Collaborate?
Examing the impact of faculty & librarian collaboration on students’ information literacy skill development in the First Year Seminar (FYS)
https://projectchat.com

Methods
- Exit of Semester Student Survey
- Project Team Interviews
- Librarian Survey
- Exit of Semester Student Survey
- Faculty Survey
- Librarian Interviews
- FYS instructor interviews

Our Question
Does collaboration between FYS faculty and librarians make a difference to first year students’ information literacy skill development?

385 1st year students
24 FYS instructors
5 weeks of the FYS curriculum
0 student learning assessments

St. Mary’s College of Maryland Team Members

Acknowledgements

Project Results
Starting Points
- FYS instructor’s strong belief in high-impact experiences with librarians but lacks the confidence to fully utilize them.

Relationships
- 24 FYS students were interviewed using the following scales:

Collaborative assignment development
- Faculty integrates some librarian feedback
- Observation of student research (no change)
- Librarian shared strategy, assignments
- Key contact between librarians & FYS

We are doing more
- "Teaching collaboration score"
- "Most frequent # of classes taught by librarians per FYS"

Collaboration & Students’ Use of Library Information Resources
- The frequency of faculty & librarian collaboration scores were significantly higher for students who

Where Collaboration Fell Short
- There was no significant association between faculty-librarian collaboration levels and students’ information literacy skills based on an evaluation of sample surveys.

Overall scores were ABDUCK GIL
- Research Question Formulation (mean = 1.44)
- Appropriateness of sources (mean = 2.28)
- Relevance of sources (mean = 2.37)
- Relevance of database (mean = 2.37)
- Relevance of library (mean = 2.37)

Actions & Recommendations
- Immediate Action
- Shift in Practice
- Shift in Thinking
- Widder Implications
- Future Planning

- Scorecard for FYS students
Font Size

Large enough to see from 4 – 6 feet away.

Too small?

Legible!

Note: Font size may vary from this guide based on your poster size.

Title

70-120 point bold

Sub-titles

48-54 point bold

Authors

36-40 point

Headers

40-48 point bold

Main text

28-36 point

References / Acknowledgements

24-28 point
Font Choice

• Familiar fonts are easier for your audience to read.

Serif vs. Sans-serif

• Serif Fonts have small strokes on the letters. They improve readability for large amounts of text.
• Sans-serif fonts do not have these strokes. They provide a clean, contemporary look, but may make it difficult to read large sections of text.
Fonts matter!
Font Combinations

• Use this as a guide, not a template!

• Common combinations often include...
  • One serif, one sans-serif
  • One heavy, one light

Helvética / Garamond
Caslon / Univers
Futura / Bodoni
Garamond / Futura
Gills Sans / Caslon
Minion / Gill Sans
Myriad / Minion
Caslon / Franklin Gothic
Trade Gothic / Clarendon
Franklin Gothic / Baskerville
Font Combinations: Example

FOSTERING A COMMUNITY DIALOGUE:
Yale Public History Institute’s Candid Conversation on Race

AFRICAN AMERICAN HISTORY is AMERICAN HISTORY, and to strengthen public history we must be inclusive of the histories that we tell including African American history so it pertains to your public history mediation will help portray American history more accurately. Public historians must be equipped with tools to help them interpret objects through an African American history lens, engage inandelous conversations about race, and allow the multiple voices of the past to remain multiple.

The poster presentation was inspired by conversations made at the 2013 Yale Public History Institute (YPHI) at Yale University. The YPHI was hosted by the Yale Initiative for the Study of Slavery, Restraint, and Abolition and the National Museum of African American History and Culture. At the YPHI, graduate students, scholars, and public history institutions worked together to consider how public history institutions and their cultural museums can better interpret African American history.

Presented at the National Council on Public History 2014 Annual Meeting

New York, New York - Pennsylvania State University

DEVELOPING DIALOGUE

BE HONEST about what you don’t know.

LEARN more about the current scholarship.

SEEK an audience as diverse as your community.

SET ground rules for discussion.

ENGAGE community members to act as cultural brokers.

PARTNER with local public history institutions.

DEVELOP relationships with local faculty and graduate students.

ACKNOWLEDGE (your institution) biases.

CONSIDER screening training for staff.

HIRE staff members of African American descent.

“Cultural diversity is an invitation to DISCOVER rather than to exclude.”

Richard Robins

FOR MORE INFORMATION, go to auraria.library.yale.edu and search for “YPHI 2013” or contact the author.
Text

- Minimal text
- Short phrases
- Bullet points when possible
- Edit, edit, edit!
Quantitative phospho-proteomics of inhibitor-treated Plasmodium falciparum schizonts reveals protein kinase G-dependent phosphorylation of Myosin A serine 19

Introduction

Cyclic guanosine 3’5’-monophosphate (cGMP)-signalling has been shown to play an essential role in the regulation of various physiological processes, including contraction, cell growth and development. cGMP-dependent protein kinase (PKG), a major effector kinase of the cGMP pathway, catalyzes a wide range of phosphorylation events and is involved in the regulation of numerous cellular processes. In Plasmodium falciparum, PKG has been implicated in the regulation of erythrocyte invasion and invasion efficiency, but its role in the development of the parasite has not been fully characterized.

Methods

Tightly synchronized fully segmented schizonts were treated with 2 mM cGMP or DMSO for 4 h or 24 h. The samples were then processed for phosphoproteomics and imaged using two-dimensional gel electrophoresis. Western blot analysis was then performed using PKG antibodies.

Results

Only phosphorylation occurring in schizonts treated with cGMP was detected. Western blot analysis confirmed the phosphorylation of PKG isoforms in the treated samples.

Conclusions

Our results provide evidence for the role of PKG in the regulation of the phosphorylation of Myosin A serine 19. This phosphorylation may be involved in the regulation of parasite development.

Reference

Text: Paragraph Alignment

**Left-aligned text**
is the easiest to read and should be your top choice for body text if not your entire poster.
This paragraph is left-aligned!

**Justified text** (newspaper-style) has also been a common choice for its clean look, but studies have shown that the uneven spacing of words makes text harder to read.
This paragraph is justified!

**Centered text** is useful for headers or when dealing with a few short lines of text. Never use it for full paragraphs as it’s more difficult to read.
This paragraph is centered!
Color

• Accessible
• Meaningful
• Subtle
  • The attention should stay on your content.
Color: Accessible: Color Vision Deficiencies

- The colors of the rainbow as viewed by a person with no color vision deficiencies.
- Approximation of the colors as viewed by a person with protanopia (red-green weak).
- Approximation of the colors as viewed by a person with tritanopia (blue-yellow weak).
- Approximation of the colors as viewed by a person with monochromacy.

- Crucial for graphs / data.
- Less important for text.
Color: Accessible: Contrast

• All people require appropriate contrast to be able to read text.
• This need typically increases with age.

• This line is easy to read because black on white provides great contrast.
• This line is legible, but harder to read.
• This one can barely be seen at all!
• By increasing the contrast between the colors, we can make it a little easier.
• What about this version?
• Do note that contrast can look different on screen versus in print. Light-on-dark is the best choice for screens, but can be difficult to read when printed, especially if the font is thin.
• There are online contrast checkers too!
Color: Meaningful

• Colors can...
  • highlight, separate, relate, and define information.
• Headings should be a consistent color, but potentially different from body text.
• Keep consistent colors in graphs and across graphs to represent the same data.
• Select a neutral background color.
Color: Meaningful Example 1

A Novel Approach to Campus Health and Wellness: The UCLA Healthy Campus Initiative

Live Well is a campus-wide wellness movement with the goal of making UCLA the healthiest university campus in America. [http://healthy.ucla.edu/]

**CORE VALUES**
A “healthy campus” is a place that:
1. Fosters high-level wellness
2. Encourages personal responsibility
3. Respects diversity
4. Strives to reduce inequalities in health
5. Is integrative

**PROCESS**
- Support and integrate existing health-related groups, programs, and activities
- Use best practices to coordinate new approaches and programs
- Map campus assets and learn from different stakeholders
- Organize community collaborations and facilitate bottom-up approaches
- Host monthly steering committee meetings and area-specific working groups
- Fund and facilitate student projects related to Live Well goals and values
- Develop metrics to measure health and wellness changes
- Maintain a website and other campus communications for resources and events

**CHALLENGES AND SUCCESSES**
Challenges:
- Cross-campus coordination of large groups
- Branding and recognition
- Student turnover and leadership transition
- Large and diverse campus population
- Wide range of health disparities
Successes:
- Bringing together diverse health groups
- Practical, action-based projects
- New data collection and publications
- Impact beyond the UCLA campus
- UC President Napolitano recommendation for a Live Well model at all UC campuses

**KEYS TO SUCCESS**
- Organizational integration
- Administration buy-in
- Interdisciplinary leadership
- Including non-traditional stakeholders
- Targeted and adaptable use of resources
- Combination of research and practice
- Collaboration between pods
- Graduate student researcher input
- FUN!

**ACKNOWLEDGEMENTS**
UCLA Healthy Campus Initiative is envisioned and supported by Jane and Terry Semel. A special thank you to Live Well leadership including Dr. Wendy Stassew, Dr. Michael Goldstein, Louise Ino, pod leaders and graduate student researchers, and steering committee members.
Color: Meaningful Example 2
Images & Other Graphics

• Have a purpose!
  • A picture is worth a 1,000 words.
• Include captions.
• Align images (and text boxes).
• Most digital images are saved at 72dpi. For printing, you want 300dpi or at minimum 150dpi.

*dpi = dots per inch
**View image properties of an image to determine dpi.
Images Alignment: Example
Image Resolution: Example

High Res Image 300dpi

Low Res Image 72dpi
Tables

• Show **selective** data
  • Show a subset of the most important data – if readers want more, they will ask.

• Test with and without vertical and horizontal lines.
  • Make lines a lighter color so data stands out
  • Lines can help readers read a table.
Whitespace

Refers to the negative space in your poster: the space in between sections and graphics.

- Increases the legibility of your content.
- Lets sections “breathe”!
  - A poster without enough whitespace is overwhelming.
- May not be literally white: it will be whatever your background color is.
Popular Software Options

PowerPoint
• Powerful tool and easy to learn.

Publisher
• More functionality than PowerPoint (for posters), but a slight learning curve if you have never used it.

Illustrator
• More functionality, but a learning curve.

Google Slides
• Free online software and easy to learn.

Prezi
• Online software.
PowerPoint Slide Size Very Important

• On the Design tab, click Slide Size. Set your single slide to the size of your poster.
• 48” width by 36” height is a common size; however, check the conference requirements.

Note: You must edit the slide size in regular PowerPoint.
The Poster Session

Preparing for and presenting at the poster session.
Ask for Feedback

Ask a friend, colleague, mentor, or professor to look at your poster before printing and be critical!

Print a test copy!

*Your test copy should not be the size of the poster, but rather a smaller version.
Print Your Poster

Save your presentation as a PDF before sending it to a printer!

• Campus
  • Some departments have poster printers. Ask!
  • Auraria Library, Innovation Garage

• Online
  • Many specialize in academic posters and will quickly print and ship.

Cost can range from $25 to $80 depending on size and paper type.

Do NOT use glossy paper! It reflects light and makes it difficult to read.
Before the Poster Session

• Practice a “poster talk” of various lengths.
  • i.e. 30 seconds, 90 seconds, 3 minutes
• Create a short handout including highlights of your research and contact info.
• Protect your poster in a bag or poster case.
What happens during a poster session?

- Exhibition-style typically.
- Author stands with their poster.
- Attendees walk by and observe.
  - Skimmer, Reader, Chatter
- Conversations to discuss poster content.
- Exchange of handouts or contact information.
During the Poster Session

• Smile.
• Wear a nametag.
• Speak clearly and at a moderate pace.
• Keep your language simple.
• Use your hand to direct your listener to your poster.
• Dress in neat and clean clothing and wear comfortable shoes.
• Thank people for their interest.
Share Your Poster

• Submit your poster to the Auraria Institutional Repository (AIR).
  • digital.auraria.edu/air
• More people will be able to view your poster and your research.
• Provides a URL to add to your resume or website.
# Bad poster bingo

<table>
<thead>
<tr>
<th>Different parts of poster don’t line up</th>
<th>Boxes within boxes</th>
<th>Zigzag reading order</th>
<th>More than three typefaces</th>
<th>Long-winded title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradient fills in coloured boxes</td>
<td>Big blocks of text</td>
<td>Photographic background</td>
<td>Unlabelled error bars on graphs</td>
<td>Pixelated pictures</td>
</tr>
<tr>
<td><strong>More than five colours</strong></td>
<td>Institutional logos bookending title</td>
<td><strong>Free space</strong></td>
<td><strong>ALL CAPITALS</strong></td>
<td>Text with shadows, outlines, or bevels</td>
</tr>
<tr>
<td>Abstract</td>
<td><strong>Underlined text</strong></td>
<td><strong>Comic Sans</strong></td>
<td>3-D graphs</td>
<td>Checking tablet or phone during presentation</td>
</tr>
<tr>
<td>Tables showing data that could be in a graph</td>
<td>Poster does not fit on poster board</td>
<td>Comic Sans (it’s that annoying)</td>
<td>Objects almost touching or overlapping</td>
<td></td>
</tr>
</tbody>
</table>

By Zen Faulkes, betterposters.blogspot.com

Training and More Info

• guides.auraria.edu/posters
• guides.auraria.edu/presentations
• guides.auraria.edu/researchmethods
• guides.auraria.edu/publishyourresearch
• guides.auraria.edu/datavisualization
Questions?

Ask Us: library.auraria.edu/services/askus
Chat/IM: AskAuraria and on Auraria Library’s Website
Text: 303-848-8444
Email: library.eref@auraria.edu
Phone: 303-315-7700
Survey

tinyurl.com/aurariasavvyresearcher