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!
Poster Content

Content depends upon your research or project.
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
• Method(s) and Materials
• Results
• Conclusion(s) / 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
Surprisingly 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, managed 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/6000/12). 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.

Conservation and Flattening
A partnership with the Department of Computer Science and the Centre for Digital Humanities at UCL, established a four-year ErGo 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 parchment. Once the sheets were moistened enough, they were gently pinned on a metal sheet with fibre-wrapped magnets to hold creases open during the drying process and left to dry under tension. This opened up areas of parchment where the camera could not reach the text. Once treated, the sheet were reheated to prepare 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 in 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 texts. This enabled comprehensive searching of the document.

The transcript and images of the document are being made available online through the project website, to enable sophisticated online presentation and searching of the document contents.

@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
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.
• “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 Example 2
Font Size

Large enough to see from 4 – 6 feet away.

Size?

Legible!

Title

70-100 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

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

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.
Font Combinations

• Use this as a guide, not a template!
• Common combinations often include...
  • One serif, one sans-serif
  • One heavy, one light

Helvetica / Garamond
Caslon / Univers
Futura / Bodoni
Garamond / Futura
Gills Sans / Caslon
Minion / Gill Sans
Myriad / Minion
Caslon / Franklin Gothic
Trade Gothic / Clarendon
Franklin Gothic / Baskerville
CONSTRUCTION & SIMULATION ANALYSIS OF AN IMPROVED ACTIN FILAMENT MODEL

INTRODUCTION

The microscopic structure of actin filaments is still unknown. We propose a new model of actin filaments that incorporates the global structure of a recently published model but also conserves internal structural features. The improved quality of the model is apparent in a comparison made between this model and other recent actin models using molecular dynamics (MD) simulation.

HOLMES 2010 MODEL

- Actin monomer: Gaussian T-shaped 3.25 Å base
- Global conformational change (GCD) simulation
- Random bending loop replacement on the actin model
- Atomic force microscopy (AFM) image
- Random bending loop replacement on the actin model
- Optical microscopy

METHODS

All models were assessed on a 3D computer simulation. The average RMSD of the Holmes 2010 model is lower than that of the simulations of the Gaussian actin structure. Actin is the main component of the structure. The Holmes 2010 model shows a lower RMSD than the simulations of the Holmes 2010 model. The number of hydrogen bonds within the actin molecules is higher in the MD of Holmes 2010 than in the Holmes 2010 model. The model of G-actin is rigid, but the Holmes 2010 model has a higher number of hydrogen bonds between actin molecules.

RESULTS

The Holmes 2010 model was developed and MD simulations of G-actin were performed to compare the interaction and solubility with those of G-actin. A further simulation of the Holmes 2010 model was performed in the ATP state.

CONCLUSIONS

The MD simulation reflects the evolution in quality of the actin model over the last years. The Holmes 2010 model presents both a high conformational agreement with the recent G-actin model and a consistent experimental stereochemistry. As such, it should form a useful basis for further detailed investigation of the F-actin structure and its functional relationships.
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 monophosphate (cGMP) signaling has been shown to play an essential role in the response of host cells to various infections, including parasitic infections. cGMP signaling is mediated by guanylyl cyclase (GC) and guanylyl cyclase-coupled guanosine triphosphate (GTP) hydrolyzing protein kinases, which phosphorylate and activate a variety of downstream targets. However, the role of cGMP signaling in the response of Plasmodium falciparum schizonts to inhibitors is not well understood.

Methods

Tightly synchronized Plasmodium falciparum schizonts were treated with 2 mM cGMP (Sigma) or 10 μM GEM (GEM) for one hour to block phosphorylation. Parasites were collected, treated with 100 mM iodoacetamidol (IAA), and washed with ice-cold PBS. After treatment, parasites were lysed with 1% NP-40 in PBS, and the lysates were centrifuged at 13,000 g for 15 minutes. The supernatants were subjected to SDS-PAGE and Western blot analysis.

Results

The results showed that cGMP treatment significantly increased the phosphorylation of Myosin A serine 19 (pSer19) compared to the untreated control. The phosphorylation level of pSer19 in the cGMP-treated parasites was also significantly higher than that in the GEM-treated parasites. These findings suggest that cGMP signaling may play a role in the response of Plasmodium falciparum schizonts to inhibitors.
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, descriptions, 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.
- Approximation of the colors as viewed by a person with tritanopia.
- 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/

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
- Involving 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 Stasser, Dr. Michael Goldstein, Louise Ino, pod leaders and graduate student researchers, and steering committee members.
Images & Other Graphics

- Have a purpose!
- 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
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.
Design = Communication

• Be clear
• Be concise
• Be engaging

• Browse examples and find a look you like best.
• Select a layout and flow that makes sense for your content.
• Use color, font, and style to help clarify, separate, and emphasize content.
Finally...

Ask a friend or colleague to look at your poster and be critical!

Print a test copy!*

*Your test copy should not be the size of the poster, but rather a smaller version.
Software
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.
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 from the elements 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.
• 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](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.
Training and More Info

- [guides.auraria.edu/posters](http://guides.auraria.edu/posters)
- [guides.auraria.edu/presentations](http://guides.auraria.edu/presentations)
- [guides.auraria.edu/researchmethods](http://guides.auraria.edu/researchmethods)
- [guides.auraria.edu/publishyourresearch](http://guides.auraria.edu/publishyourresearch)
- [guides.auraria.edu/datavisualization](http://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