Poster Presentations

Julie Mayers

An effective poster

- An effective poster operates on multiple levels
  - Source of information
  - Conversation starter
  - Advertisement of your work
  - Summary of your work
- A poster uses visual grammar
  - It shows, not tells.
  - It uses a visual logic – with a hierarchical structure that emphases the main points

Define Your Message

- Goal
  - Convey a clear message
  - Support it using a range of images & short blocks of text
- Know your message
  - What do you want your audience to learn?
- Focus on your message throughout the poster

Creating your Poster

- Planning : message, space, format & deadlines
- Focus : focus on the message & keep it simple
- Layout : use visual grammar
- Headings : headings convey major points
- Graphics : good graphics can dominate your poster
- Colours : make a poster attractive & readability
- Text : avoid jargon, size: 24 point in text, 36 for headings
- Editing : be ruthlessly to reduce the amount of text and avoid errors

Planning

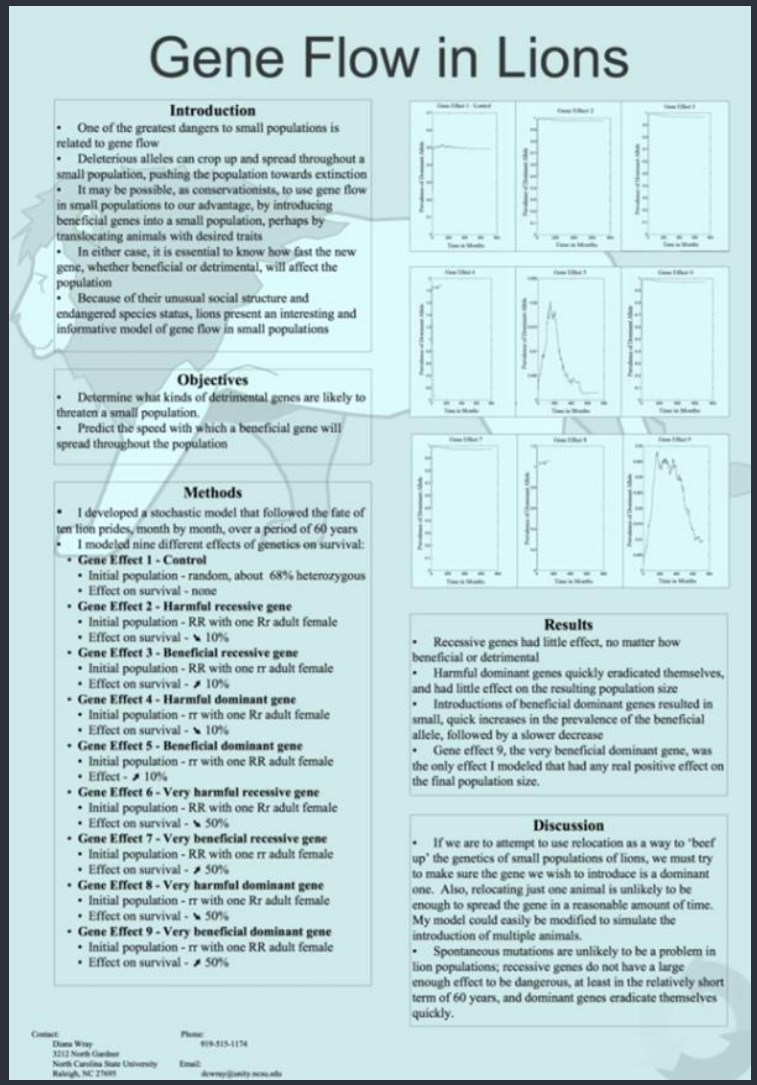
My Poster is …

- What is my message?
- How much room do I have?
- What milestones should I establish

CALENDAR						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Layout

- Visual grammar
- Columnar format
- Use organizational cues
- Reader gravity
- Balance and white space



Gene Flow in Lions

Introduction

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- Deleterious alleles can crop up and spread throughout a small population, pushing the population towards extinction
- It may be possible, as conservationists, to use gene flow in small populations to our advantage, by introducing beneficial genes into a small population, perhaps by translocating animals with desired traits
- In either case, it is essential to know how fast the new gene, whether beneficial or detrimental, will affect the population
- Because of their unusual social structure and endangered species status, lions present an interesting and informative model of gene flow in small populations

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- Determine what kinds of detrimental genes are likely to threaten a small population.
- Predict the speed with which a beneficial gene will spread throughout the population

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- I modeled nine different effects of genetics on survival:
  - **Gene Effect 1 - Control**
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- Harmful dominant genes quickly eradicated themselves, and had little effect on the resulting population size
- Introductions of beneficial dominant genes resulted in small, quick increases in the prevalence of the beneficial allele, followed by a slower decrease
- Gene effect 9, the very beneficial dominant gene, was the only effect I modeled that had any real positive effect on the final population size.

Discussion

- If we are to attempt to use relocation as a way to 'beef up' the genetics of small populations of lions, we must try to make sure the gene we wish to introduce is a dominant one. Also, relocating just one animal is unlikely to be enough to spread the gene in a reasonable amount of time. My model could easily be modified to simulate the introduction of multiple animals.
- Spontaneous mutations are unlikely to be a problem in lion populations; recessive genes do not have a large enough effect to be dangerous, at least in the relatively short term of 60 years, and dominant genes eradicate themselves quickly.

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Headings

- Summarize
  - Use headings as opportunities to summarize your work in large letters. A hurried reader should be able to get the main points from the headings alone.
- Organize
  - Good headings are part of the visual grammar that helps move readers through your poster.
- Be Hierarchical
  - The more important the point, the larger the type.
- Be Bold
  - Make the strongest statements your research allows

Colours

- Colours should be used only to emphasise &to add interest
- Avoid bright colours, ie bright pink, bright yellow, bright green, etc
- Pastel shades convey feelings of calm
- Bright colours conjure an image of conflict and disharmony

Full colour vision

Red & green colour blindness

Background Colours

- Use background and foreground colours that complement each other
- It's best to keep the background light – dark background will cost more to print and is harder to read
- Avoid gradient fills – they can look tatty when printed

Text

- Too many font types distract, especially when they appear on the same sentence
- Use fonts that are easy on the eye
  - This is Times Roman
  - This is Arial

Text

- Headings should appear larger than the other text, but not too large
- Do not use all UPPER CASE type – makes it difficult to read

WHAT DO YOU THINK OF THIS LINE WHERE ALL THE CHARACTERS ARE IN UPPER CASE?

What do you think of this line, where only the first character of the first word is in upper case?

Fonts

- Do not use a different font type to highlight important points – it loses the fluency and flow of the sentence.

In this sentence, I want to **emphasise** the word ‘emphasise’

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Spelling

- There is nothing more amusing or annoying than spelling mistakes
  - It gives the impression that you are:
    - Careless
    - Not bothered
    - Not worthy of a high assessment mark

Common Errors

Incorrect	Correct
Please except the gift	Please accept this gift
He's alright after his fall	He's all right after his fall
He refused to take my advise	He refused to take my advice
Put the bag back in it's place	Put the bag back in its place
The car past the train	The car passed the train
We spent a quite evening reading	We spent a quiet evening reading

Generic Real-time Uniform K-space Sampling Method for High-speed Swept-Source Optical Coherence Tomography

Jiefeng Xi , Li Huo , Jiasong Li and Xingde Li (xingde@jhu.edu)
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Abstract

We developed a universal, real-time uniform K-space sampling (Rt-UKSS) method for high-speed swept-source optical coherence tomography (SS-OCT). An external clock synchronized with the zero-crossing time of an interferometric calibration signal enables uniform data sampling of the OCT signal in K-space. The Rt-UKSS method is adaptive and applicable to a generic SS-OCT system of a wide range of A-scan rates without special adjustment. We successfully implemented the Rt-UKSS method in an SS-OCT system of a 40-kHz scanning rate. Real-time imaging of biological tissues was demonstrated with a measured axial resolution of 9.3 μm and detection sensitivity greater than 120dB.

Challenge and Objective

The OCT fringe signal of SS-OCT is normally nonlinear and hysteretic. Therefore, calibration/resampling prior to Fourier transform is indispensable, but it has several challenges :

- Slow down the overall data processing speed
- Require oversampling the OCT fringe signal
- Sensitive to any fluctuation in wavelength sweeping

The hardware-based Rt-UKSS method is implemented by providing point-by-point triggers with uniform K-spacing for the digitizer. This method is:

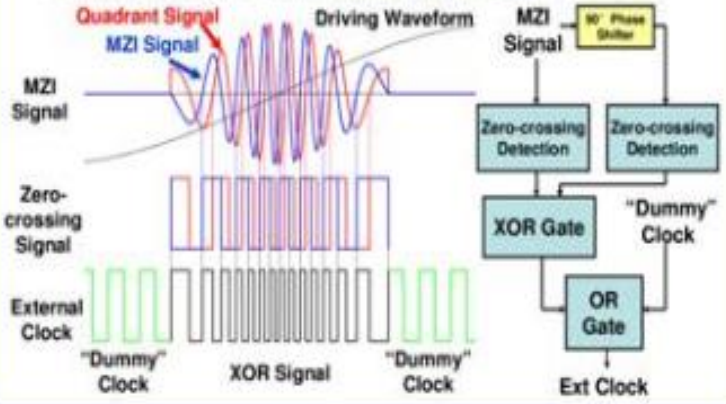
- Robust, adaptive, and applicable
- Insensitive to the instability of the swept source
- Able to handle broader spectrum bandwidth

Methods

- Requirements of hardware-based Rt-UKSS :
  - Two clock cycles with an equal K-space interval for each fringe cycle of MZI calibration signal
  - 50% duty cycle of the clock signal over a broad range of frequency required by fast ADC
  - "Dummy" clock to fill adjacent A-scans' gap
  - Minimal propagation delay and jitter time of external clock circuitry

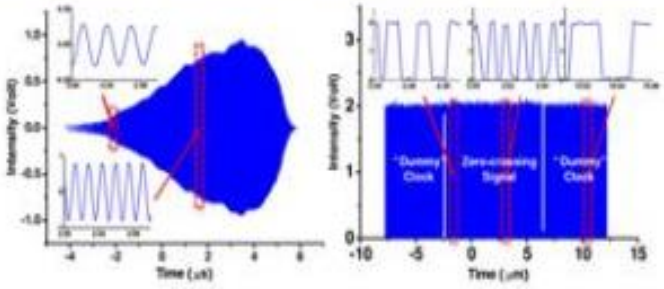
Methods

- Steps of real-time uniform K-space sampling approach (left figure below):
  - A broadband 90° phase shifter to generate a quadrant signal from the original calibration signal
  - High-speed comparators to produce two zero-crossing signals from original and quadrant signals
  - Exclusive OR gate to combine two zero-crossing signals
  - Dummy clock signal generator to fill up the idle gap



Results

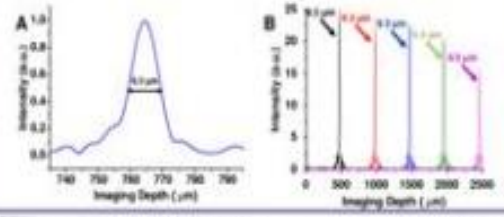
- Experimental results of the external clock signal (right figure above) :
  - Duty ratio of the external clock over the entire A-scan is close to 50%
  - The frequency change of the MZI signal covers more than one octave
  - The trigger frequency changes from 50 to 110 MHz for each A-scan
  - The circuitry currently works properly for 20 to 100 kHz A-scan rate

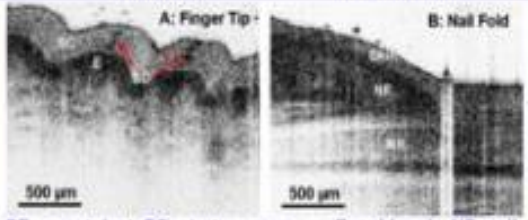


Results

- Rt-UKSS method is implemented in an SS-OCT system with a 40kHz FDML at λ_0=1300nm.
- Comparison between real-time linear K-space sampling and numerical calibration:

	Numerical Calibration	Linear K Sampling
Acquired number of data points per A-line	2048	818
Calibrated data points number per A-line	680~750	818
Axial resolution (in air)	~ 10.2 μm	~ 9.3 μm
Data processing speed	~30,000 A-lines/sec (nearest neighbor)	~ 400,000 A-lines/ sec (interpolation)
Data transfer and saving requirement	~ 300 MB/sec	~ 125 MB/sec





SD: sweat duct, SC: stratum corneum, E: epidermis, NF: nail fold, and NR: nail root

Conclusion

Rt-UKSS method for a high-speed SS-OCT system with an A-scan rate 20-100 kHz was developed. This method is relatively easy to implement and reduces demand in the speed of digitization, data transfer, processing and real-time saving. It also affords a broader wavelength scanning range for better axial resolution.

Acknowledgement and Reference

This research was supported in part by Coulter Foundation Translational Research Awards, the National Institutes of Health (CA116442, CA120480) and the National Science Foundation (Career Award XDL).

[1] J. Xi, L. Huo, J. Li, and X. D. Li, "Generic Real-time Uniform K-space Sampling Method for High-speed Swept Source Optical Coherence Tomography," **Optics Express**, Accepted

UrbanFlood

The Common Information Space: A Framework for Early Warning Systems

B. Baliś, T. Bartyński, M. Bubak, G. Dyk, T. Gubala, M. Kasztelnik
AGH University of Science and Technology, Kraków, Poland

Motivation

Early Warning Systems (EWS):

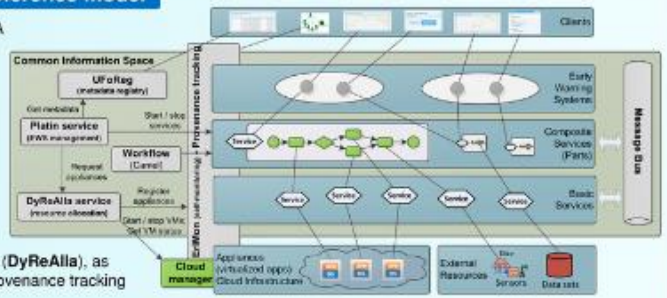
- ►Can be crucial for mitigating the impact of natural disasters
- ►Require **advanced computing ecosystem** which supports the entire EWS lifecycle: development, deployment and execution
- ►Combine and orchestrate **various distributed resources**: data sets, scientific apps, real-time sensor data feeds, etc.
- ►Involve **mission- and time-critical** scenarios based on **resource-intensive** computations

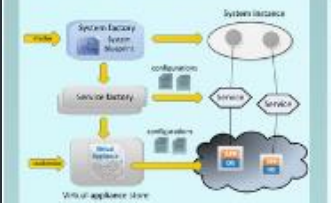
Objectives

Provide **the Common Information Space (CIS)** supporting ►**EWS development** by providing a reference EWS model and development framework ► EWS deployment through the novel concept of EWS-factory-as-a-service. ► **EWS execution** by providing a runtime infrastructure for resource allocation, self-healing, mission- and time-critical operation, and urgent computing

CIS Architecture and EWS reference model

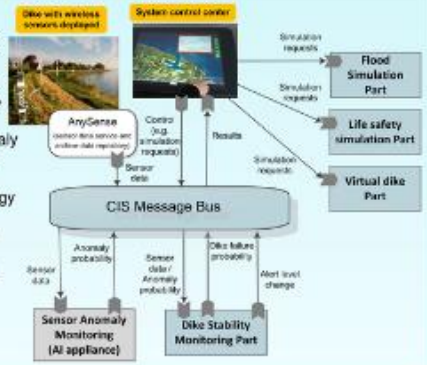
- ►EWS reference model leverages SOA architectural patterns adapted for scientific computing
- ►Domain resources exposed as basic services, orchestrated into application scenarios and exposed as composite services, aka Parts
- ►Enterprise Application Integration engine used for workflow
- ►CIS provides runtime services for execution management (**Platin**), registry of metadata and state (**UFoReg**), dynamic resource allocation (**DyReAlla**), as well as self-monitoring (**ErlMon**) and provenance tracking
- ►Apps are wrapped as virtual images (appliances) and deployed in the cloud
- ►Dynamic resource allocation is based on on-line monitoring of performance and resource demands
- ►New EWS instance is started through the EWS factory service by configuring an EWS blueprint





Flood EWS

- ►CIS-based implementation of Flood Early Warning System
- ►Leverages in-situ sensors for predicting flooding threat due to dike failures in urban areas
- ►Cascade of models for anomaly analysis, risk assessment, and impact prediciton
- ►Implemented in CIS technology as blueprints for application scenarios, orchestrated into an overarching EWS workflow
- ►Supported at runtime by CIS services



Conclusion

CIS contributes conceptually and technologically at least in the following areas:

- ►CIS as a **factory for Early Warning Systems**. Proven by the implementation and validation of the Flood EWS.
- ►CIS as a **geo-ICT technology for spatial data processing services**. CIS adopts guidelines of the INSPIRE directive and leverages OGC standards for service interfaces.
- ►CIS as a **runtime infrastructure** for resource-intensive mission-critical systems.

References

►B. Balis, M. Kasztelnik, M. Bubak, T. Bartynski, T. Gubala, P. Nowakowski, J. Broekhuijsen. The UrbanFlood Common Information Space for Early Warning Systems. *Procedia Computer Science*, 4:96-105, 2011. Proc. of the ICCS 2011 Conference.
►B. Balis, T. Bartynski, J. Broekhuijsen, M. Bubak, G. Dyk, T. Gubala, M. Kasztelnik, R. Meijer. UrbanFlood: experiences in adopting INSPIRE guidelines for flood early warning systems. INSPIRE 2012 Conference.
►B. Balis, T. Bartynski, M. Bubak, G. Dyk, T. Gubala, M. Kasztelnik. A Framework for Early Warning Systems. Accepted for E-Science 2012.

http://dice.cyfronet.pl/products/cis

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- Deleterious alleles can crop up and spread throughout a small population, pushing the population towards extinction
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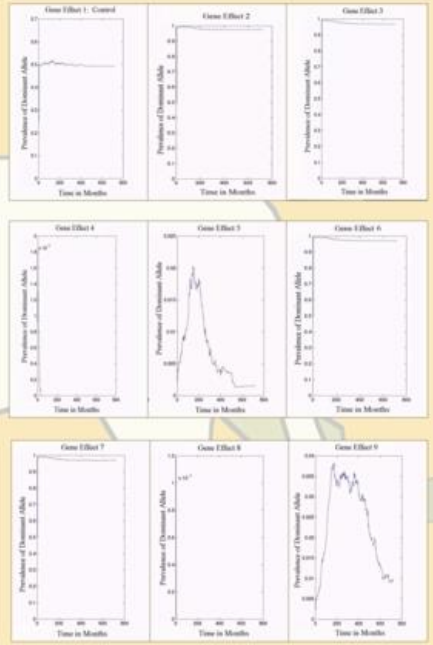

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Southern Flounder Exhibit Temperature-Dependent Sex Determination

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Introduction

Southern flounder (*Paralichthys lethostigma*) support valuable fisheries and show great promise for aquaculture. Female flounder are known to grow faster and reach larger adult sizes than males. Therefore, information on sex determination that might increase the ratio of female flounder is important for aquaculture.

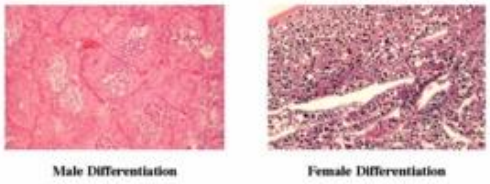
Objective

This study was conducted to determine whether southern flounder exhibit temperature-dependent sex determination (TSD), and if growth is affected by rearing temperature.

Methods

- Southern flounder broodstock were strip spawned to collect eggs and sperm for *in vitro* fertilization.
- Hatched larvae were weaned from a natural diet (rotifers/*Artemia*) to high protein pelleted feed and fed until satiation at least twice daily.
- Upon reaching a mean total length of 40 mm, the juvenile flounder were stocked at equal densities into one of three temperatures 18, 23, or 28°C for 245 days.
- Gonads were preserved and later sectioned at 2-6 microns.
- Sex-distinguishing markers were used to distinguish males (spermatogenesis) from females (oogenesis).

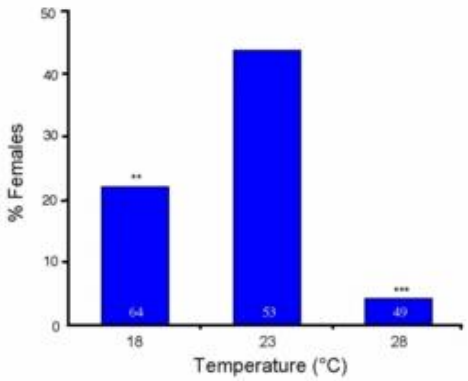
Histological Analysis



Male Differentiation

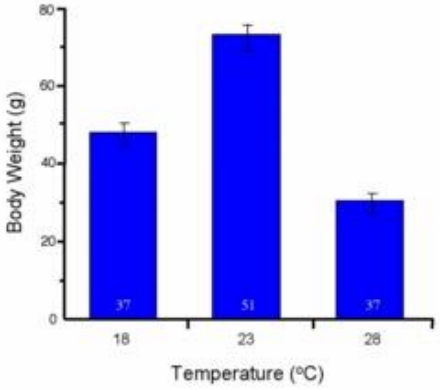
Female Differentiation

Temperature Affects Sex Determination

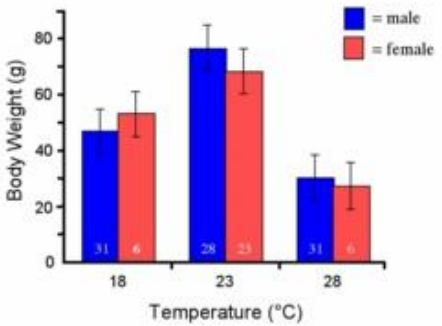


(**P < 0.01 and ***P < 0.001 represent significant deviations from a 1:1 male:female sex ratio)

Rearing Temperature Affects Growth



Growth Does Not Differ by Sex



Results

- Sex was discernible in most fish greater than 120 mm long.
- High (28°C) temperature produced 4% females.
- Low (18°C) temperature produced 22% females.
- Mid-range (23°C) temperature produced 44% females.
- Fish raised at high or low temperatures showed reduced growth compared to those at the mid-range temperature.
- Up to 245 days, no differences in growth existed between sexes.

Conclusions

- These findings indicate that sex determination in southern flounder is temperature-sensitive and temperature has a profound effect on growth.
- A mid-range rearing temperature (23°C) appears to maximize the number of females and promote better growth in young southern flounder.
- Although adult females are known to grow larger than males, no difference in growth between sexes occurred in age-0 (< 1 year) southern flounder.

Acknowledgements

The authors acknowledge the Saltonstall-Kennedy Program of the National Marine Fisheries Service and the University of North Carolina Sea Grant College Program for funding this research. Special thanks to Lea Ware and Beth Shimps for help with the work.