

Як оформляти постер?

Підготовка

- * По-перше, **ОЗНАЙОМТЕСЯ З ІНСТРУКЦІЯМИ**, які надають організатори зустрічі!
- * Знаючи **всі деталі** перед початком роботи, вам буде легше успішно закінчити весь процес.
- * Більшість з тих, хто прийде до постеру, хоче **не читати**, а скоріше **інспектувати** його.
- * Тому ключем до створення ефективного постера є **візуальна простота**, що досягнута без втрати **інформаційного наповнення**

ОСНОВНІ ВИМОГИ

- * **Читабельність** — ознака того, як легко сприймаються ідеї при переході від одної частини до іншої. Складні речення, перевантажені граматичними помилками важко читати.
- * **Чіткість** — якість та величина шрифту така, що з відстані 1-1,5 метра текст можна прочитати і зрозуміти.
- * **Просторова організація** - Просторова організація робить різницю між досягненням 95% а не лише 5% вашої аудиторії: час витрачений на пошук наступної ідеї або частини даних – це час, забраний від обдумування наукової цінності роботи.
- * **Стислість** - дослідження показують, що ви маєте лише 11 секунд, аби привернути і утримати увагу вашої аудиторії, тому робіть найважливіші заголовки видними і короткими. Більшість з вашої аудиторії збирається запам'ятати лише ці заголовки. Той, хто безпосередньо має інтерес до галузі дослідження, знайде вас так чи інакше і поговорить з вами про деталі.
- * **Стиль** — витримання певного стилю справляє враження продуманості і професійності, що додає позитиву в оцінці роботи автора.

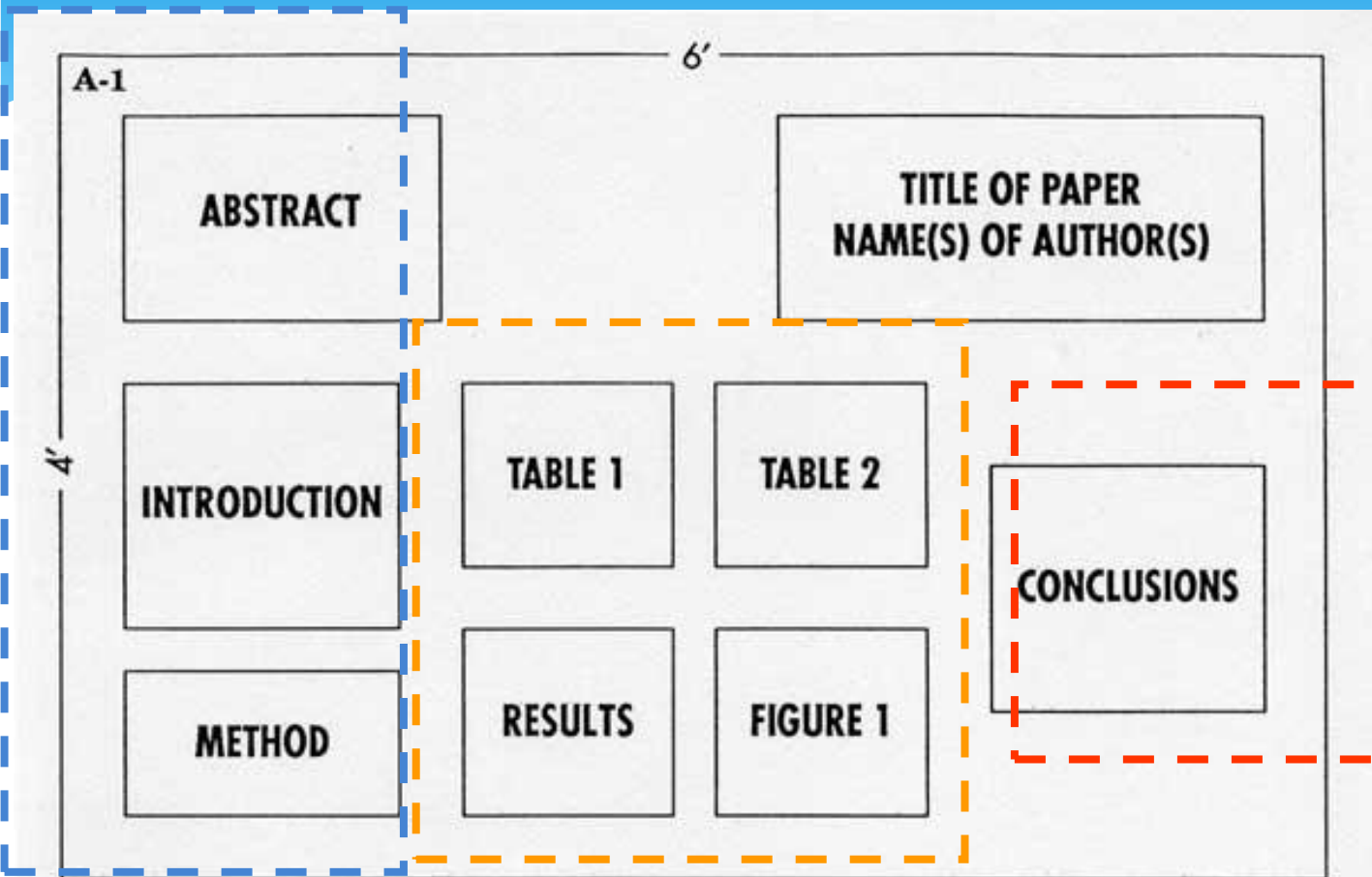
Наповнення

- * Зробіть заголовок коротким і інформативним.
- * Додайте короткий абстракт для орієнтації оглядача.
- * Сплануйте історію, яку ви розкажете слухачу:
 - * зміст: що, чому, як ?
 - * результати і аналіз
 - * важливість результатів
- * Використовуйте “мову телеграм” і виділяйте основні положення
- * Побудуйте прості графіки і таблиці
- * Додайте візуальні матеріали для ілюстрації проекту і результатів
- * Облегшіть слухачам можливість слідувати логіці інформації, що пояснює роботу

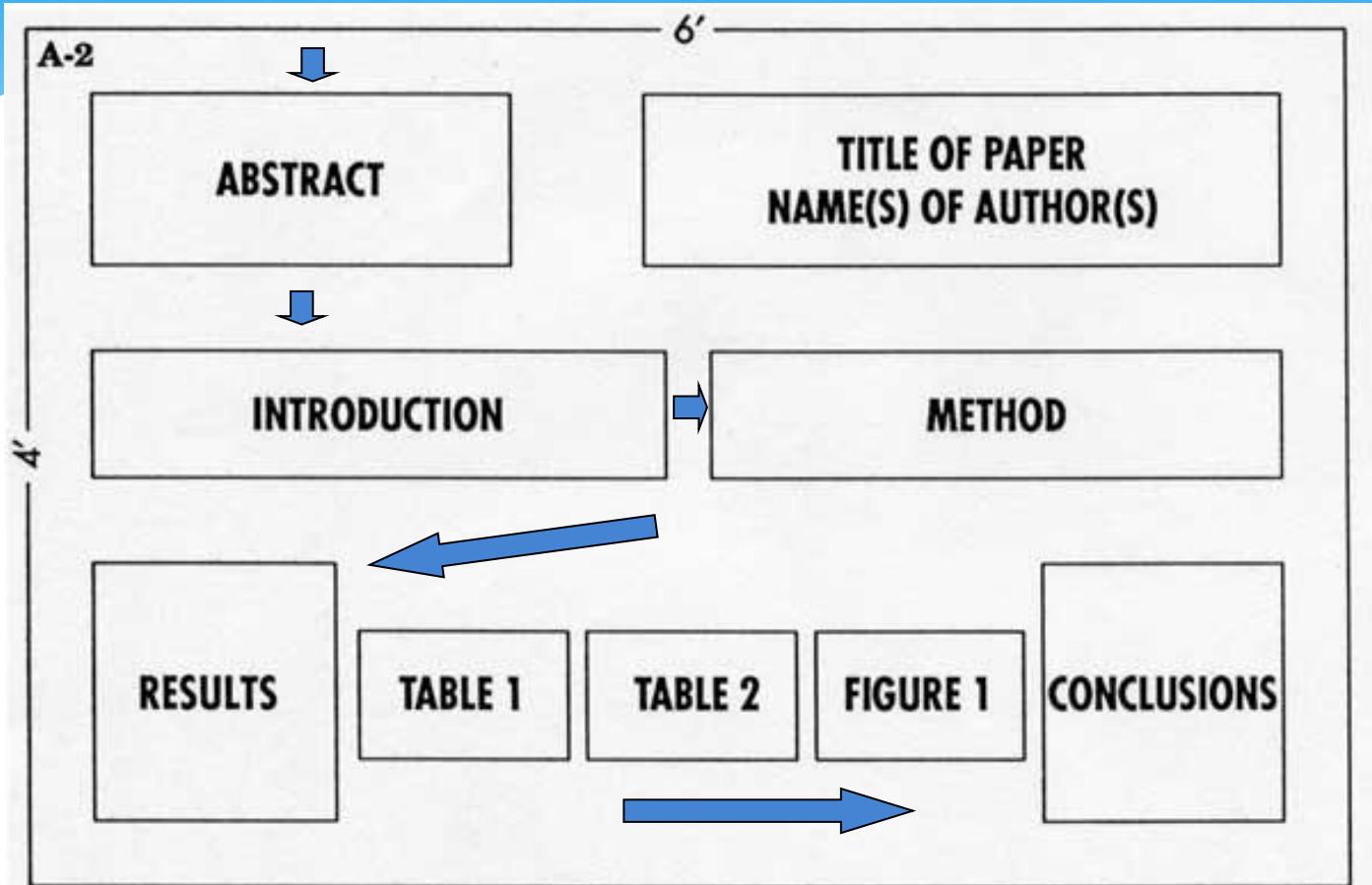
Структура

<u>Мета</u>	<u>Титулка</u>	<u>Результати</u>
<u>Гіпотеза</u>	<u>Графіки</u>	<u>Висновки</u>
<u>Матеріали та методи</u>	<u>Ілюстрації</u>	<u>Абстракт</u>
<u>Хід роботи</u>	<u>Дані та їх аналіз</u>	<u>Інша необхідна інформація</u>

Кластерна схема



Логічна схема



Симетрична схема

DESCRIPTIVE TITLE

Author and Author, Departmental Affiliation

Abstract

Methodology -
in brief

Results
e.g. Table 2

Analysis and
interpretation of
results

More Results

Statement of research
question

Results
e.g. Table 1

Impact of findings

Illustration

Illustration

Acknowledgements of
faculty guidance,
technical assistance,
funding, etc.

32"

40"



Enhanced stabilizing system for wind-driven electric plants



Motivation

Energy saving is a global problem that has no borders.
 Traditional energy sources are limited.
 Most of the energy production gives air pollution.
 Alternative energy sources are very cheap and they are unlimited.
 It is especially urgent for Ukraine – most of the energy sources are imported.

THE GOAL

- To develop a new wind velocity transducer that would have higher efficiency and precision.
- To increase the efficiency of the developed device.
- To create a prototype of such a transducer.
- To check working capacity and efficiency experimentally.
- To find alternative applications of this device.

Topical question

It is reasonable to meet wind-driven electric plants (WDEEP). The main technical problem is the necessity of stabilized frequency of rotation of the anemometer. So it is necessary to develop a control system and – a wind velocity transducer that has less disadvantages compared to existing ones.

These are the disadvantages:
 -Too high response to wind flows.
 -Absence of an output electric signal as the result of the measurements.
 -Influence of external factors, such as temperature, pressure and humidity of the environment, density of the air, etc.
 -Mechanism of fragile and cooling parts.
 -Complexity of mounting anemometer.
 -Big mass and dimensions.
 -Large and strong-consumer body.
 -Possibility of the contamination or liquid evaporation.

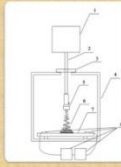


Advantages of the new transducer

- Uses alternative sources of energy that are unlimited.
- The reaction to wind flows is lowered.
- The electric signal as an output that can be measured (impedance, PC, etc.).
- The body protects the device from the mechanical damage and contamination.
- Small size and mass, low cost.

- The wind can be measured in any direction due to the elastic grid ring.
- Made out of improvised material that can be easily replaced.
- The influence of external factors, such as temperature, pressure and humidity of the environment, density of the air, etc. is compensated by the bridge connection.

Developed transducer



Structure:
 1 A lead
 2 A Applique
 3 Elastic and hermetic gasket ring
 4 Shock-protected cylindrical body
 5 Directed light source
 6 Conic spring
 7 Recording unit
 8 Recording unit
 9 Photocells
 10 Microammeters

The main operation:
 The wind blows and puts an resistance force on a ball.
 The ball tilts to some angle (so that the beams become equal).
 The spring gives proportional reaction – returns the pointer to its initial position.
 The light beam projects on the recording unit and changes.
 Due to photoelectric effect, photocells start to produce electric current.
 So the current is measured in the diaphragm of a bridge by the microammeters and the wind velocity is obtained.



Future prospects

- The most beautiful and precise is to use the camera matrix that has a lot of pixels – it gives the opportunity to measure the position of the light from the light tube very precise and give the result to the PC.
- The smallest and the lightest would be using MEMS (Microelectromechanical Systems). These "small" devices (size < 1mm) convert electric energy into mechanical one or backwards, in such a way the same device can be created but much smaller. This could allow to install these devices almost everywhere (trucks, cars, planes, ships, computers, cell phones etc.)

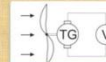
- Can be a part of the global meteorological network.
- As a part of it to help to create weather maps, prevent natural disasters.
- The most interesting would be to use the moving laser light and the diffraction grating. The dispersion of the beam would be measured and the result will be calculated.
- The cheapest version can be just fiber cable and instead of the light source, the sunlight would be used during the daytime.
- The most economical and ecological version is to use solar batteries to supply the light source and to recharge in accumulators (so that it can work at night).

Summary

- The analysis of the wind velocity detectors used in WDEEP and existing anemometers was made.
- The new detector was developed that gives the opportunity to get more precise and efficient measurements results and send them to other units of the control system.
- The prototype model of developed anemometer was made.

- The working capacity and efficiency was checked experimentally.
- The developed detector can be mounted on WDEEP, and also can be used in meteorology after insignificant update.
- Other possible applications and updates were discussed.

Existing models



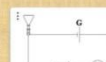
Rotation frequency of the windmill is measured by an accelerometer. The signal and that with the relative between rotation frequency and the accelerometer voltage is line. To it is connected a resistor, due to it velocity by the voltage measuring.



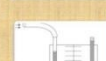
In this scheme the cable anemometer position and resistance that produce the signal. The cable anemometer is made of resistance and elastic force.



The resistor causes the air resistance force that acts on the grid and the every value of the wind velocity the more the angle of the cable causes the higher air resistance are greatly from an angle.

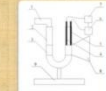


The relation between the resistance of a energy converter and a temperature is used. The resistance of the wire usually leads to better fuel advantages and thus the current velocity would also increase.



When there is an resistance force a device will produce on the light in the form of the resistance force. The difference is measured and also velocity is obtained.

Prototype model



Structure:
 1. Anemometer
 2. 10 Ohm resistor with liquid in it
 3. 10 Ohm resistor
 4. Anemometer
 5. 10 Ohm resistor
 6. 10 Ohm resistor
 7. 10 Ohm resistor
 8. 10 Ohm resistor
 9. 10 Ohm resistor
 10. 10 Ohm resistor

Main operation:
 The wind gets into the air inlet and puts pressure on it.
 The liquid level increases in the right tube.
 The electrodes become covered with the electrolyte.
 As the air continues to come with the power supply the current density in the circuit.
 It can be measured and wind velocity can be calculated.

The disadvantages of the model:
 -Angle and heating parts could produce errors.
 -Low sensitivity.
 -Changes in resistance to wind changes.
 -The necessity to take a care in the choice of wind velocity in the anemometer.
 -The protection from mechanical damage.



Versatile Wind Velocity and Direction Transducer

Problem Statement

Due to constant wind direction and velocity change, the operation of the windmill generators is often sub optimal.

Such problems as the lack of precision, slow reaction time, inability to work in broad temperature ranges, influence of the environment, complexity of the moving parts and fragility take place in the existing patterns of anemometers.

Purpose

Develop a low cost, combined, reliable and accurate wind force and direction sensor, that has more advantages compared to existing ones.

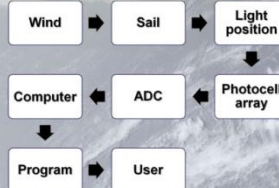
Hypothesis

Photocells can be used to measure wind velocity and direction. Precision and effectiveness can be provided by electronic data processing.

Research Procedure

- analyze the existing patterns of anemometers and find their disadvantages
- develop a new pattern that would have less disadvantages compared to the existing ones
- increase the efficiency and precision of the device
- build an experimental model
- check working capacity and efficiency experimentally
- find possible applications of the device

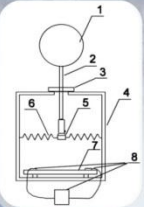
How it works



Application

Wind-driven electric plants
Weather stations
Predicting natural disasters
Cranes' security system
Airports
Safer navigation
Narrow water-ways
Anywhere, where it is necessary to measure velocity and direction of gas or liquid flow

Structure



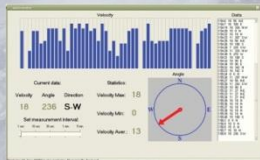
- Sail
- Spindle
- Elastic Gasket ring
- Shock-protected body
- Directed light source
- Springs
- Recording unit support
- Recording unit
- Photocell array
- Microammeters



Principle of operation

The working principle is based on the spring suspended light source and a photocell array below. Light source is connected with the aerodynamic sail via a spindle shaft assembly fixed to the sensor with a flexible elastic rubber gasket. Photocells detect the light position on the array from the source tilted by the wind and induce signal that is detected and digitized. Tilt angles are calibrated with known wind speeds and included in the software prior to operation.

Supporting Software



- Real-time measurements
- 2 modes of operation
- Check the flow info easily
- Calculate statistics
- Build the table
- Plot the graph
- Send the results to the Web
- Save the results

Advantages

2-in-1: velocity + direction
High precision and effectiveness
Long lifetime
Few moving parts
No influence of external factors (temperature, air humidity and pressure, etc.)
Low reaction to wind flaps
Low price
Small size & mass
Damage protection
Possible for any gas or liquid flow
Plug & Play interface
Easy-to-use program
Ability to save and analyze the results
USB output gives an opportunity to transfer results in different ways:



Робота над постером

- * Плануйте час
- * Підготуйте весь матеріал для наповнення
- * Виберіть схему постера
- * Зробіть ескіз
- * Вирішіть питання друку
- * Виберіть стиль і колір
- * Випробуйте презентацію на друзях, колегах
- * Завершіть роботу над постером
- * Збережіть елементи і кінцевий варіант постера

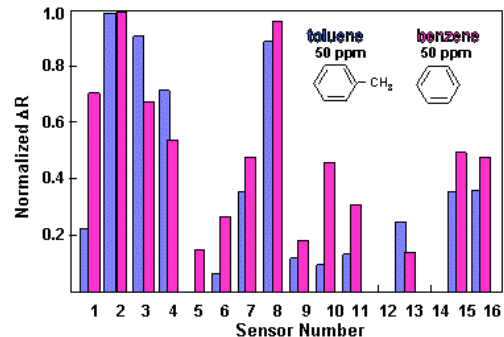
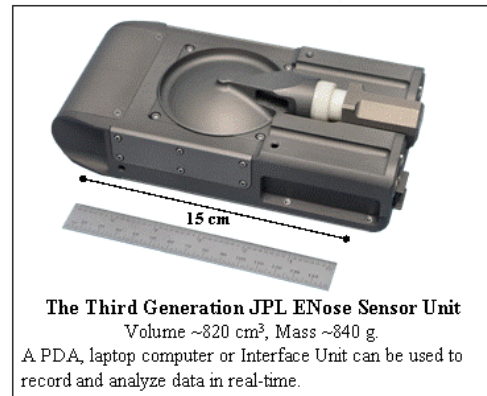
Гарні приклади



THE JPL ELECTRONIC NOSE (ENose)



- ◆ The JPL ENose provides rapid, early identification and quantification of target chemical species.
- ◆ An electronic nose is an array of semi-selective chemical sensors. The JPL ENose is 32 sensors which change electrical resistances when environmental composition changes.
- ◆ The sensing array responds in “fingerprint” patterns to a broad suite of target analytes. Fingerprints are deconvoluted for id and quantification.
- ◆ Targets include **leaks or spills** of selected compounds, Hg, SO₂ and possibly heating insulation which signals **electrical fires**.
- ◆ The JPL ENose can be used to **monitor cleanup processes**.



Гарні приклади



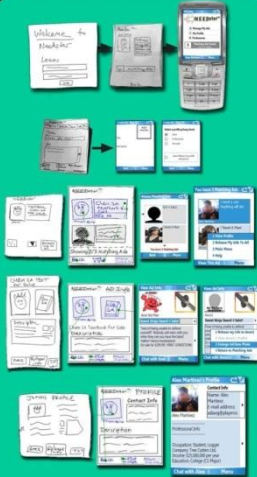
NEEDster

Need-based Exchange Enhancement Device

{ PROBLEM }

- People have a variety of needs they turn to classified ads for.
- One might need to sell their car, find a roommate, or get a copy of the CS 61a textbook.
- How can mobile tech help?

{ DESIGN EVOLUTION }



{ TARGET USER GROUP }

- Anybody who spends a lot of time in book stores, cafes, public transit, bars, the mall, campus, any place with a lot of people for potential ad matches.
- Most likely young working professionals and college students.



{ FINAL UI }

- Allows users to make, edit, delete ads, read ads, read profiles of other users, chat with others, access help.
- Can also simulate setting up personal profile on a website.
- No Bluetooth functionality and Chat is with a Bot.
- Ability to quickly populate ad creation fields from a pre-determined database



Tim Mullen
Jason Bolton
Mark Farahani
Steven Jian
Alex Martinez

{ SOLUTION }

- NEEDster turns users into walking billboards! Users broadcast ads from their cell phones and are alerted if they pass by someone with a matching ad.



Забгато тексту, але гарна ідея фону



A Visual Servoing System for an Aquatic Swimming Robot



Junaed Sattar and Gregory Dudek, Centre for Intelligent Machines, McGill University

Introduction

Controlling underwater robots in real time is challenging since radio communications are infeasible in sea water. For this reason, using visual cues for autonomous navigation is an attractive option. In recent work we have developed and deployed a swimming robot called AQUA[1] that uses legged motion to swim and navigate underwater. In this work, we have successfully designed and implemented a visual servoing system for the AQUA amphibious platform that enables it to track and follow a target underwater[2].

The AQUA Robot

AQUA is a direct descendant of the RHex hexapod robot, a biologically inspired platform capable of swimming as well as walking using six 'legs' or flippers. These legs generate thrust for propulsion and also act as control surfaces for navigating underwater. Three cameras are currently housed in the robot, one of which provides digital output via the IEEE1394 (aka Firewire) bus. For visual servoing, frames from this camera have been used.

Visual Servoing Hardware



Vision processor: a Pentium M CPU on a PC104/Plus form factor, running Linux

Control processor: a Pentium CPU on a PC104/Plus form factor

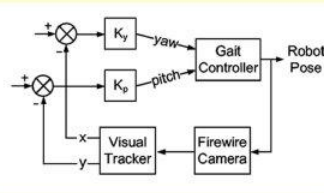
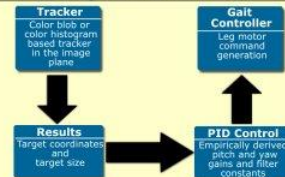
PC104/Plus IEEE1394 controller card

IEEE1394 (Firewire) Digital Camera, 640x480 resolution

Visual Servoing Software

- Vision code written in C++, based on the VXL vision libraries, running under a customized version of Linux.
- Color blob tracker works in the hue space. Both trackers are tuned automatically at the start of the tracking sequence by looking at the target object and setting color parameters.

System Overview

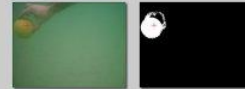


Experimental Results

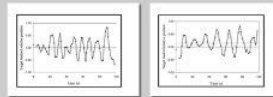
- At the first trial in January 2005 at Barbados, the robot successfully followed a yellow ball of 15 cm diameter in the open sea under natural lighting conditions for over 25 meters in a straight line. The target was approximately 2 meters in front of the robot.
- Only the color blob tracker was used.
- Due to the absence of tuning data, the pitch and yaw commands were seen to overshoot the target during some runs. Strong underwater currents and a lack of a stability control mechanism contributed to this behaviour as well.
- Integration with an Inertial Measurement Unit in later experiments have provided stable roll control, and it can also be used to smooth out oscillations in pitch and yaw commands.

Experimental Results (Contd.)

- The output from the color blob tracker. The raw captured frame is to the left, while the segmented frame is to the right. The tracker was tuned to follow a yellow colored object.



- Yaw (below left) and Pitch (below right) command plots against time over a single run of visual servoing. The center line is the average value of the yaw commands; the dotted line in the pitch plot shows the average value of the pitch commands.



- Visual servoing in action: AQUA is following the diver holding a yellow ball as a target. Yellow was chosen as the target color since it gave the maximum contrast from the surrounding marine environment.



Conclusion

- The approach to servo-control for AQUA is inherently simple and enables AQUA to achieve some degree of autonomy in navigating underwater.
- A tracker that explicitly models the motion of the target would provide robust tracking and reduce the effect of false targets and poor lighting conditions.

References

1. C. Georgiadis et al., "AQUA: An Aquatic Walking Robot", IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS, 2004.
2. J. Sattar et al., "A Visual Servoing System for an Aquatic Swimming Robot", to appear in IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS, 2005.

Мілкий текст, але гарна структурованість



SUPER LIGHT WEIGHT COMPOSITE WING DESIGN CONTEST SAMPE 2008



Cedric Jacob, John Gangloff, Raymond McCauley, Nicholas Counts, Jason McLaughlin
 University of Delaware – Center for Composite Materials – Department of Mechanical Engineering

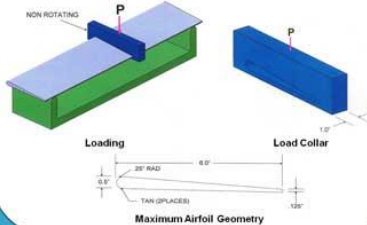
INTRODUCTION

Design Challenge:

"To build an ultra light composite wing with the highest ratio of applied load to wing weight (PWWT) at a maximum 2.5 inch deflection."

Additional Goals:

- Maintain dimensions of 26" length X 6" width
- Optimize the wing to endure 3-point bending failure with applied load to load collar
- Straight wing with constant surface cross-section



PROCESSING

Vacuum assisted resin transfer molding (VARTM) was used to infuse carbon fiber with an SC-15 resin. An inlet and outlet hose is placed within a sealed bag before attaching a vacuum pump. Atmospheric pressure then forces the resin throughout the wing. Excess resin was drawn into a pressure vessel under a vacuum. Much attention was given to the path of the resin. Carefully placed media allowed the resin to distribute throughout the carbon fiber.



VARTM Layup of Wing Prototype

TESTING

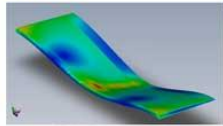


Mechanical Testing of Wing Prototype

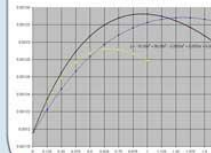
To simulate 3-point bending related to the actual competition, test wings were loaded using a mechanical testing machine. This machine is able to plot the displacement of the head versus the load imposed on the wing. Here the load arm is directly placed on our load collar.

THEORY

SolidWorks & COSMOS/press was used to calculate the area moment of inertia for different cross sections and the resulting wing mass. This allowed us to optimize the cross sectional geometry and fiber layup. Displayed is the initial finite-element analysis (FEA) of the wing design.



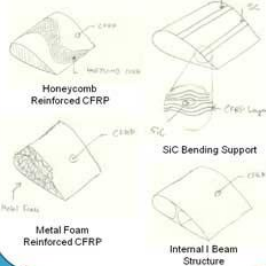
Finite-Element Analysis



Mathematical Modeling

To assist in the design process, a model was created to optimize the composite layup arrangement with geometrical and material data. Displayed is a chart that compares specific area moment versus carbon fiber strip width for different numbers of carbon fiber layers. Optimization of this data furthered the design process to isolate the best arrangement for the final design.

CONCEPTS



MANUFACTURING



5-axis CNC Mill

Testing of the wing under 3-point bending required a loading collar. Our collar was made to the specifications of the one that will be used in the competition. It was fabricated out of stock aluminum with the cross-section of the wing.



Machined Load Collar

CHARACTERIZATION



To obtain a greater understanding of the wing design, conventional testing specimens were manufactured from wing materials adhering to ASTM standards. Using the ASTM standard, the team was able to characterize the carbon / SC-15 composite system for Young's modulus, ultimate yield strength, and ultimate tensile strength. Their properties were then coupled with our mathematical models to optimize our design concepts. In addition, the team was able to observe how different fiber layups failed and determine the best layup pattern for the contest specifications. Note: material specimens were obtained directly off of previously tested wings.

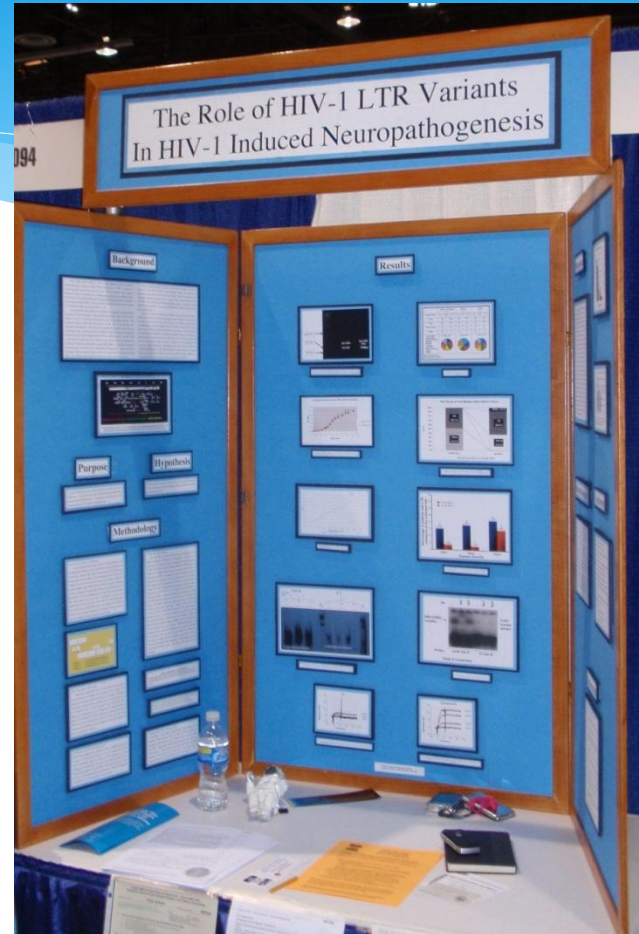
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 "C" Josiah Hughes
 Kyle Brand
 Amanda Lim

Stephen Anderson, Hope Deffor,
 Corinne Hamed, Dr. Dirk Hieder,
 John Thiravong, Anthony Thiravong
 Additional CCM Faculty and Staff



Марнування вільного місця та поганий фон



Заміткий текст та погане оформлення

Neural Stem Cell Migration and Remyelination in Response to Chemokines

Julianne M. Golinski

Introduction

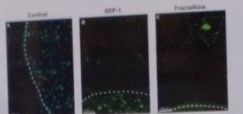
Neural stem cells (NSCs) are multipotent, self-renewing cells that reside in the adult brain and give rise to all cell types of the central nervous system (CNS). NSCs are located in the subventricular zone (SVZ) and the subgranular zone (SGZ) of the hippocampal dentate gyrus. NSCs are able to self-renew and differentiate into neurons, astrocytes, and oligodendrocytes. NSCs are also able to migrate to sites of injury and differentiate into neurons, astrocytes, and oligodendrocytes. NSCs are a promising target for cell-based therapies in the treatment of CNS injury and disease.

Methods

NSCs were cultured in the presence of chemokines (SDF-1 and Fractalkine) and their migration was measured using time-lapse microscopy. NSCs were also cultured in the presence of SDF-1 and Fractalkine with or without oligodendrocyte precursor cells (OPCs). NSCs were also cultured in the presence of SDF-1 and Fractalkine with or without OPCs and their migration was measured using time-lapse microscopy.

Results

NSCs migrate in response to SDF-1 and Fractalkine. NSCs migrate in response to SDF-1 and Fractalkine. NSCs migrate in response to SDF-1 and Fractalkine.



Discussion

NSCs migrate in response to SDF-1 and Fractalkine. NSCs migrate in response to SDF-1 and Fractalkine. NSCs migrate in response to SDF-1 and Fractalkine.

Future Directions

NSCs migrate in response to SDF-1 and Fractalkine. NSCs migrate in response to SDF-1 and Fractalkine. NSCs migrate in response to SDF-1 and Fractalkine.

IMPROVED LINEAR MAGNETIC ACCELERATOR

ENGINEERING OBJECTIVES

1. Design and construct a linear magnetic accelerator capable of accelerating a projectile to a velocity of 1000 m/s.

DATA

RESULTS FROM COIL TEST

Coil Number	Current (A)	Force (N)
1	1.0	0.1
2	2.0	0.4
3	3.0	0.9
4	4.0	1.6
5	5.0	2.5
6	6.0	3.6
7	7.0	4.9
8	8.0	6.4
9	9.0	8.1
10	10.0	10.0

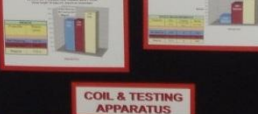
RESULTS FROM PROJECTILE COMBUSTION TEST

Coil Number	Projectile Velocity (m/s)
1	100
2	400
3	900
4	1600
5	2500
6	3600
7	4900
8	6400
9	8100
10	10000

CONCLUSIONS

The linear magnetic accelerator was successfully designed and constructed. The accelerator was able to accelerate a projectile to a velocity of 10000 m/s.

COIL & TESTING APPARATUS



30 (amps) 36 (amps) 24 (amps) 28 (amps) 30 (amps) 30 (amps) 36 (amps) 24 (amps)

Гарна титулка, але забагато тексту, праворуч завеликі заголовки

Measurement of Muon Flux and Muon Lifetime Using a High Resolution Muon Detector

Lori Wilson and Leah Wilson

INTRODUCTION & BACKGROUND

RESULTS

Run #	Time (min)	Number of Muons	Number of Events	Mean Lifetime (ns)	Standard Deviation (ns)
1	10.0000	1000	1000	2.19	0.05
2	10.0000	1000	1000	2.19	0.05
3	10.0000	1000	1000	2.19	0.05
4	10.0000	1000	1000	2.19	0.05
5	10.0000	1000	1000	2.19	0.05
6	10.0000	1000	1000	2.19	0.05
7	10.0000	1000	1000	2.19	0.05
8	10.0000	1000	1000	2.19	0.05
9	10.0000	1000	1000	2.19	0.05
10	10.0000	1000	1000	2.19	0.05

CONCLUSION

Using the high resolution muon detector, the mean lifetime has been measured to be 2.19 ns. This is in good agreement with the known value of 2.197 ns. The standard deviation is 0.05 ns. The mean lifetime is 2.19 ns ± 0.05 ns.

IS SEAGRASS GROWTH & DISTRIBUTION AFFECTED BY ENVIRONMENTAL CHANGES?

QUESTION
The natural process changes in water depth, temperature, salinity and turbidity affect seagrass growth and distribution.

HYPOTHESIS
Natural process changes in water depth, temperature, salinity and turbidity will affect seagrass growth and distribution.

DATA & RESULTS

PROCEDURE

CONCLUSION

PHOTO JOURNAL
SEAGRASS PROJECT

ACKNOWLEDGEMENTS
Thanks to the Science Department and the Science Fair Committee.

REFERENCES

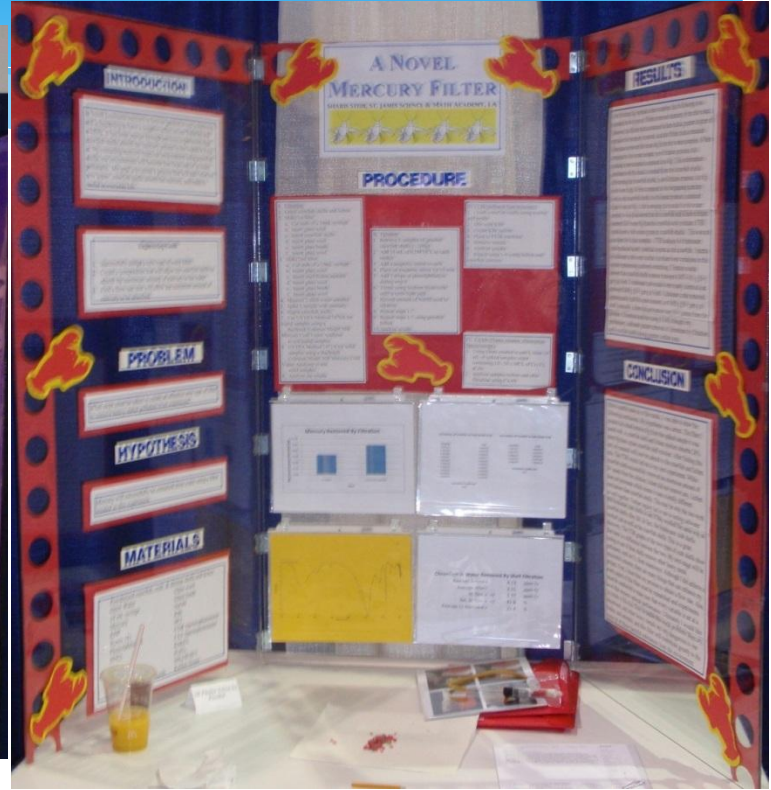
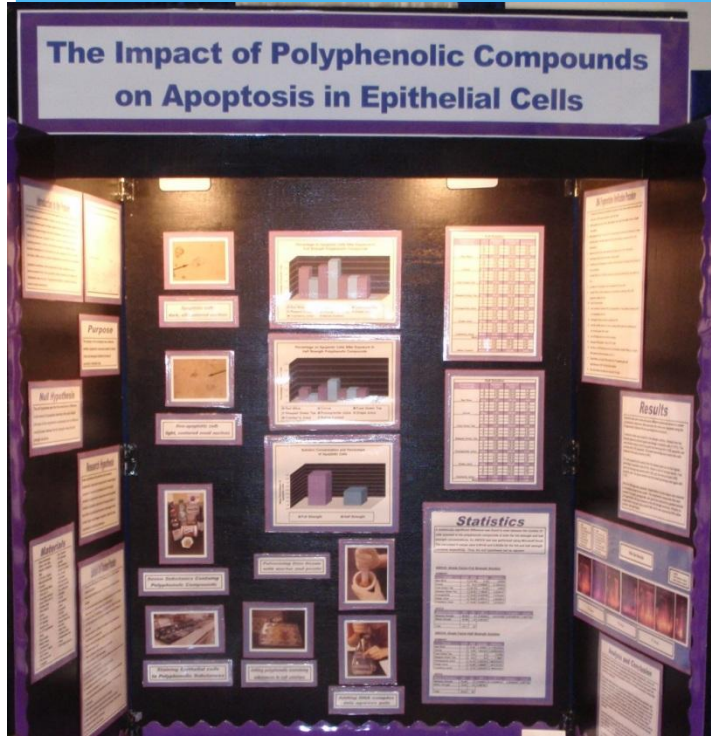
APPENDIX

SEAGRASS PROJECT

Checked Proofed by: **James McPhee**
Academy of Environmental Science
Science Inquiries/Inquiries & Contact

Photographs taken by: **Researcher & Family**

Мрачний фон та нема стилістичного оформлення



Приклади

Voltaiic Analysis of "Citrus limonum", "Citrus paradasi", "Allium cepa" and "Solanum tuberosum"

RESULTS

Plant Name	Light Voltage	Dark Voltage	Light Voltage	Dark Voltage
Citrus limonum	1.20	1.10	1.20	1.10
Citrus paradasi	1.20	1.10	1.20	1.10
Allium cepa	1.20	1.10	1.20	1.10
Solanum tuberosum	1.20	1.10	1.20	1.10

DISCUSSION OF RESULTS

First in the proceedings with fruits and vegetables in four (4) pieces in the series and for parallel citrus limonum process. That generates a higher voltage to produce an average voltage of 2.20 volts to series and an average voltage of 2.00 volts in parallel.

Second was the citrus paradasi with an average of 2.00 volts average for series and a voltage of 2.00 volts average for parallel.

Thirdly there is the allium cepa with an average voltage of 1.20 volts in series and parallel 1.20 volts.

Finally, Solanum tuberosum, which was the lowest voltage generated 1.00 volts for series and parallel 1.20 volts. To obtain these results the experiment used repeated three (3) times with each fruit have removed and the average voltage.

PURPOSE

The purpose of this experiment is to determine which of the fruits and vegetables generates the greater quantity of voltage.

PROBLEM

Which of the fruits and vegetables generates the greater voltage when connected in series and parallel? And which generates a greater number of volts and which a greater number of volts and which are connected in series and which in parallel?

HYPOTHESIS

If I connect the fruits and vegetables in series and parallel, I will get a higher voltage than when they are connected in series and parallel.

METHODOLOGY

In the experiment four (4) pieces of Citrus limonum, Citrus paradasi, Allium cepa and Solanum tuberosum were used. The four pieces of each fruit will be connected in a series circuit and in a parallel circuit.

A galvanometer will be used to test the voltage of the four (4) pieces of each fruit and vegetable used. A voltmeter will be used to measure the voltage of each fruit and vegetable connected in a series circuit and in a parallel circuit. The voltage generated by each circuit will be measured utilizing a voltmeter.

Three (3) voltage measurements will be taken and averaged. A 1.50 will be connected to the series circuit of fruits and vegetables. The average will be connected to the voltmeter for each of the series and parallel circuits. Four (4) Citrus paradasi, Citrus limonum, Allium cepa and Solanum tuberosum were used. The four pieces of each fruit will be connected in a series circuit and in a parallel circuit. The voltage generated by each circuit will be measured utilizing a voltmeter.

Three (3) voltage measurements will be taken and averaged. A 1.50 will be connected to the series circuit of fruits and vegetables. The average will be connected to the voltmeter for each of the series and parallel circuits. Four (4) Citrus paradasi, Citrus limonum, Allium cepa and Solanum tuberosum were used. The four pieces of each fruit will be connected in a series circuit and in a parallel circuit. The voltage generated by each circuit will be measured utilizing a voltmeter.

CONCLUSION

The conclusion is the 4 Citrus & Solanum generated the lowest voltage in the series and parallel circuits. Citrus paradasi generated the highest voltage when the voltage fruit was used.

There are fruits and vegetables that can be used as a source of energy.

In a future experiment other food will be analyzed in search of a source of energy.

The Motion of Wrightia religiosa Benth. Seeds

SAROCH LEEDUNRONGWATTHAKAUN

Introduction

Wrightia religiosa Benth. is a tree native to Thailand. It is a member of the Apocynaceae family. The seeds of Wrightia religiosa Benth. are used in this experiment to study the motion of seeds without wind flow.

Results

Part I Observe, Segregate Noko's Seeds Found in the Nature and Study Morphological and Anatomical Characteristics Affecting Their Motion

Chart: Percentage of Each Type of Noko's Seeds

Type	Percentage
Type 1	30%
Type 2	40%
Type 3	30%

Objectives

- Observe and segregate Noko's seeds found in the nature and study their morphological and anatomical characteristics affecting their motion.
- Study the motion of Noko's seeds when they are used in the experiment.
- Describe what can be used to create the seed motion.

Methods

Wrightia religiosa Benth. seeds were used in this experiment. The seeds were used to study the motion of seeds without wind flow.

From the model (the equation above), with this position, then Action of Force F give three velocity values: $v = 1.50 \text{ m/s}$, $v = 1.50 \text{ m/s}$, $v = 1.50 \text{ m/s}$. Action of Force F give three velocity values: $v = 1.50 \text{ m/s}$, $v = 1.50 \text{ m/s}$, $v = 1.50 \text{ m/s}$. Action of Force F give three velocity values: $v = 1.50 \text{ m/s}$, $v = 1.50 \text{ m/s}$, $v = 1.50 \text{ m/s}$.

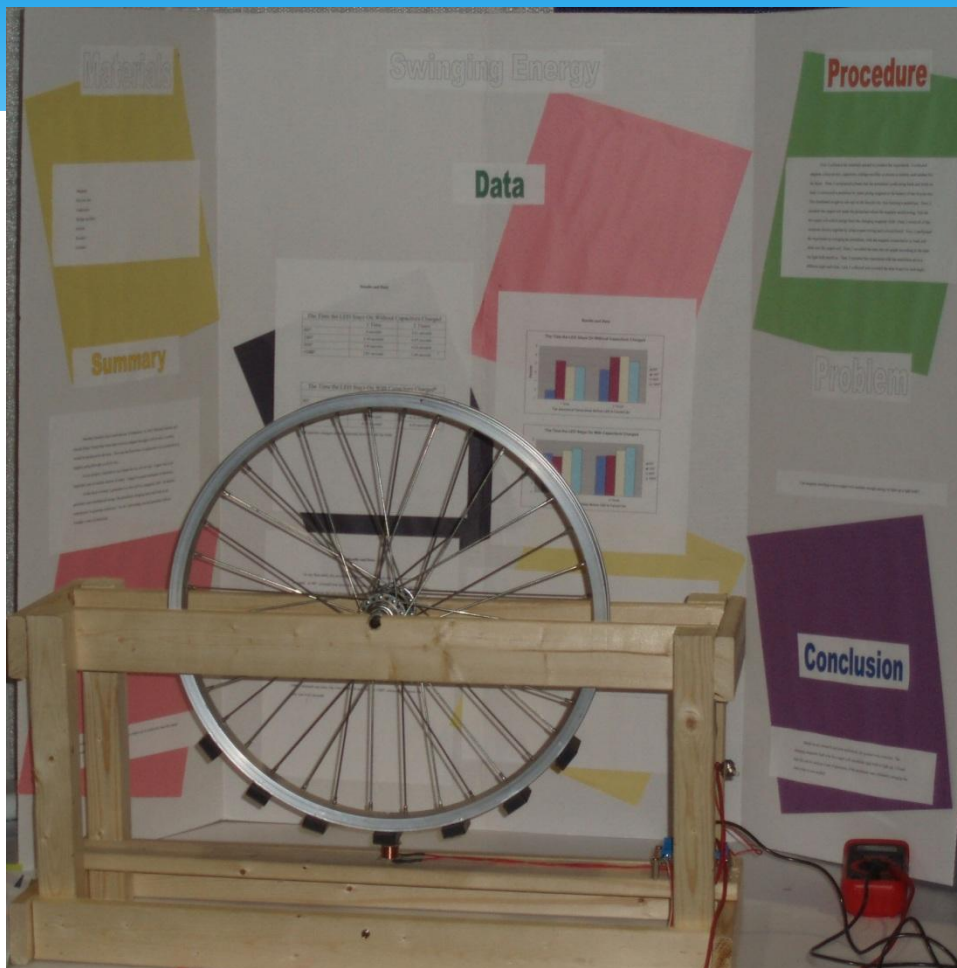
Conclusion

In this experiment, the motion of Noko's seeds without wind flow was studied. The results show that the seeds of Wrightia religiosa Benth. have a motion that is affected by the force of gravity and the force of air resistance. The motion of the seeds is affected by the force of gravity and the force of air resistance. The motion of the seeds is affected by the force of gravity and the force of air resistance.

Part III Study on Motion of Noko's Seeds with Wind Flow

The motion of Noko's seeds with wind flow was studied. The results show that the seeds of Wrightia religiosa Benth. have a motion that is affected by the force of gravity, the force of air resistance, and the force of wind. The motion of the seeds is affected by the force of gravity, the force of air resistance, and the force of wind. The motion of the seeds is affected by the force of gravity, the force of air resistance, and the force of wind.

Чорт зна шо 😊



Бажаю успіхів!

Дякую за увагу!