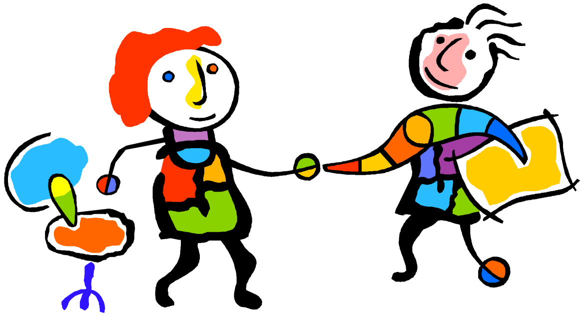
SMALLTALK

Introducing Yourself



- Excuse me, are you …
- How do you do. I´m … Welcome to …
- Let me introduce myself. My name is …
- You must be … Nice to meet you. I´m …
- I don´t think we´ve met. I´m …

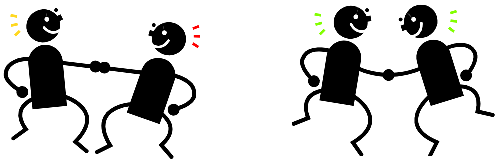
Introducing Someone Else

- May / Can I introduce you to …

- Have you met …

- Bob, do you know Bill?

Responding to Introductions



- Pleased to meet you.
- Nice to meet you. I´m …
- Hi. But please call me …
- Sorry, I didn´t catch your name.

PRESENTATIONS

Greet the Audience

- Good morning / afternoon / evening, ladies and gentlemen.
- Hello.
- Hi everyone.

Thank the Audience for Coming

- I know that you have all travelled a long way.
- I´m very grateful that you could come today.
- It´s nice to see so many faces.

Introduce Yourself

- Let me just start by introducing myself. My name is …
- As some / Most of you already know, I am …

Introduce the Topic

- The title / subject / topic of today´s presentation is …

- Today, I´d like to speak about …

- What I´d like to talk about is …

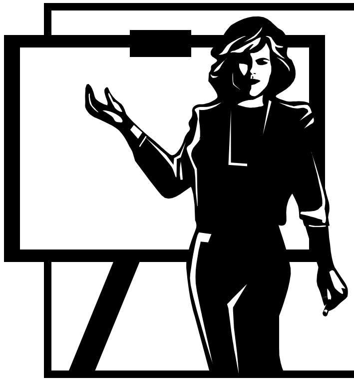
Outline the Structure

- I´ve didived / split my talk into four main parts / sections.
- Firstly, what I want to do is …
- Secondly, we will look at …
- Thirdly, we will move on to …
- Then / Next / After that / Finally I will speak about / examine …

GIVE INSTRUCTIONS FOR ASKING QUESTIONS

- If you have any questions, please feel free to interrupt.
- Please interrupt me as we go along if you have any questions.
- I´d be glad to take any questions at the end of my presentation.

Thank the Audience for Listening



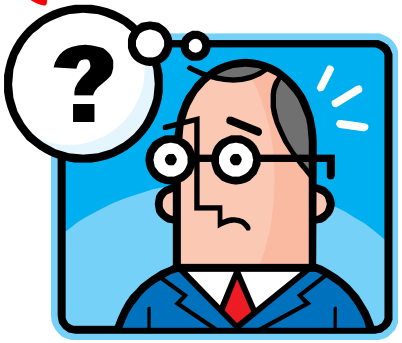
- Thank you for listening so attentively.
- Thank you for your attention.
- I hope this has been useful.

Offer The Chance to Ask Questions

- I´d be glad to answer any questions.
- So, do you have any questions?
- Are there any questions?

QUESTIONS

QUESTIONS



- GOOD
- DIFFICULT
- UNNECESSARY
- IRRELEVANT

Good Questions

Thank people for asking them.
They help you to get your message across to the audience better.

- I’m glad you asked that.
- Good point.
- That’s a very good question.

DIFFICULT QUESTIONS

These are the ones you can't or prefer not to answer. Say you don't know, offer to find out or ask the questioner what they think.

- I'm afraid I'm not in a position to comment on that.
- I'm afraid I don't have that information with me.
- I don't know that off the top of my head.
- Can I get back to you on that?

Unnecessary Questions

You have already given this information. Point this out, answer briefly again and move on.

- Well, as I said …
- Well, as I mentioned earlier, …
- I think I answered that earlier …

IRRELEVANT QUESTIONS

Try not to sound rude, but move on.

- To be honest, I think that raises a different issue.
- I'm afraid I don't see the connection.

POSTERS

- Know who your audience is.
- Use figures and graphics where possible.
- Use layout to convey the logical structure of your argument (columns, boxes, arrows, bulleted lists, etc.)

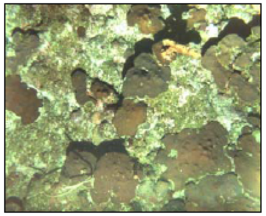
Posters

Morphological Image Recognition of Deep Water Reef Corals

Jeffrey W. Kaeli
Virginia Tech

Hanumant Singh
Woods Hole Oceanographic Institution

Roy Armstrong
University of Puerto Rico



Original color image

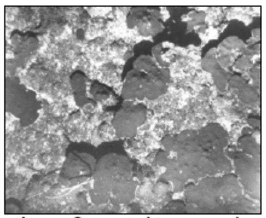
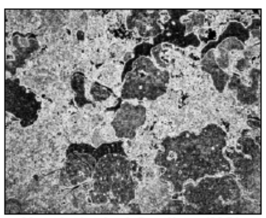


Image Converted to grayscale



Morphological Gradient (MG) intensity "texture" patterns

Introduction

Deep water coral reefs (30-100m) could shelter commercial fish stocks and provide coral larvae for recovering shallow reefs. Deep corals appear healthier than shallow corals, but depth has restricted their study. Current quantitative study methods involve scattering random points across images and visually identifying substrates.

Montastrea annularis complex is a major reef building coral representing as much as 75% of the coral cover in some areas. Its dominance and smooth texture make it an ideal candidate for image processing. The goal of this research was to develop an algorithm to segment out colonies of the *M. annularis* complex and calculate percent coverage values

Methods

Images taken by the SeaBED Autonomous Underwater Vehicle (AUV) off the Hind Bank, U.S. Virgin Islands, were analyzed with the existing random point method and the algorithm. A description of the algorithm's recognition process is shown to the left and below.

Results

Algorithm accuracy was measured using the mean of the first 15 ASF iterations, and improved exponentially with actual percent cover (Figure 1). Percent cover values generated by the algorithm (Figure 2) are competitive with those obtained using the random point method.

Discussion

Degraded coral is compensated for by misidentified substrate in the percent cover calculations. This compensation explains why error remains high while percent cover remains comparable to the random point method.

This algorithm is basic and has room for more specialized recognition strategies. Future work will involve identification of multiple species with an ultimate goal of calculating diversity and species richness.

Acknowledgments

This research was made possible by the Guest Student Program at Woods Hole Oceanographic Institution (WHOI) and the continued collaboration between WHOI and the University of Puerto Rico

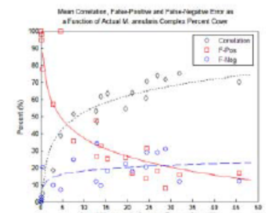


Figure 1. Mean correlation, false-positive and false-negative error

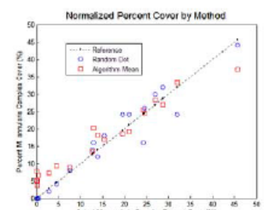
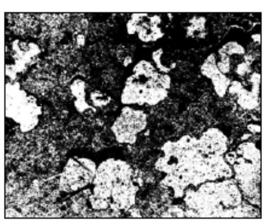
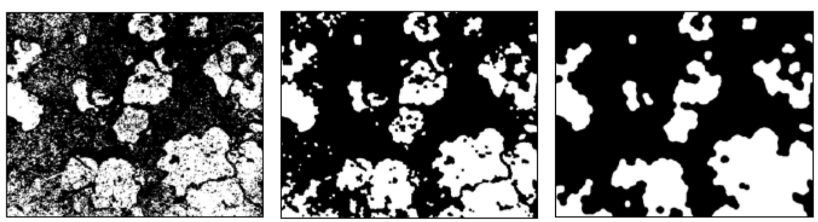


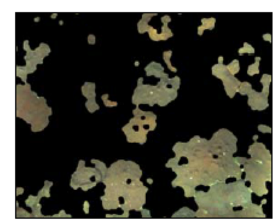
Figure 2. Algorithm mean and random point method normalized against actual percent cover



MG threshold with subtracted light and dark regions



An open-close Alternating Sequence Filter (ASF) removes salt-and-pepper noise. Each successive iteration removes particles of a larger diameter. One, five, and fifteen iterations are shown.



Original image superimposed over recognized areas

http://www.writing.engr.psu.edu/samples/poster7.pdf

POSTERS

Particles in Microdischarge Plasma: Coulombic Interactions and Optical Effects

Daniel Cho, Optical Physics and Engineering Laboratory – Nano-Cemms, University of Illinois

Objective

Coulombic interactions of micron~sized particles were studied inside a microplasma. Studying the formation of Coulomb crystals and particle interactions may help characterize the microplasma and help improve device performance.

Background – Microdischarge Devices

High electric fields, driven by AC or DC source, generate localized microplasma. The latest design of microdischarge devices utilizes the dielectric property of alumina (Al_2O_3).

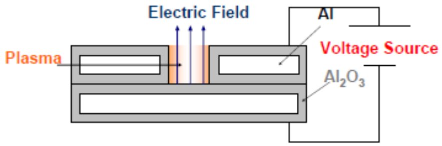


Figure 1. Microdischarge Device with Alumina Layers

Background – Dusty Plasma Physics

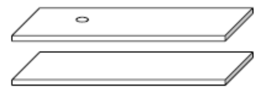
Particles in plasma can form a stabilized configuration known as a Coulomb crystal. Most formation occurs near plasma-sheath boundary, where the electric field is strong.

1. Ions and Electrons – Negatively Charged Surface

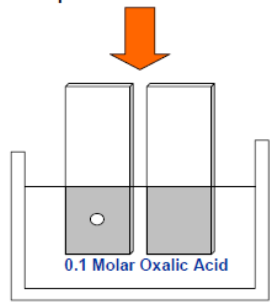
2. Ions and Surface – Strong Electric Field

Figure 2. Formation of Plasma-Sheath Boundary

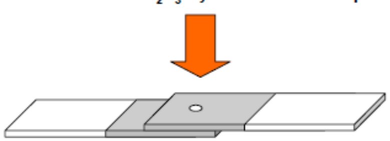
Fabrication



1. Two Aluminum Substrates:
   Top substrate mechanically drilled to diameter of 100 ~ 200 μm



2. Anodization:
   The time length of anodization controls the thickness of Al_2O_3 layer. Thickness > 10 μm



3. Bonding:
   Top and bottom substrates are bonded using Al_2O_3 paste and baked in a high temperature oven

Figure 3. Device Fabrication Process

Experiment

Particles Placed in Microcavities:

- Ho:YLF Crystals
- Green Phosphor
- Ferromagnetic Microspheres

Gases Filled in Vacuum Chamber

- Ne_2
- He_2
- Ar_2-N_2

Figure 4. Vacuum Chamber

Results

- Ho:YLF Crystals: Low emission
  No discernable movement
- Green Phosphor: Clear emission
  Distinct particle movement
  but no stable configuration
- Ferromagnetic Microspheres:
  Bright white light emission
  Unable to track movement

Acknowledgments

I would like to acknowledge Dr. Gary Eden, my faculty sponsor, and Dr. Sung-Jin Park, my graduate mentor.

http://www.writing.engr.psu.edu/samples/poster6.pdf

Posters

Cooling Effects of Dirt Purge Holes on the Tips of Gas Turbine Blades

Eric Couch, Jesse Christophel, Erik Hohlfeld, and Karen Thole

Gas turbine engines run better at higher combustion temperatures

At higher combustion temperatures, these engines generate more power and use less fuel. However, these temperatures are restricted by melting temperatures of the turbine blades downstream of the combustor (see Figure 1).

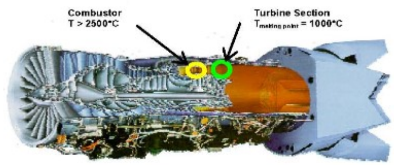


Figure 1. Pratt & Whitney F119 gas turbine engine.

Dirt purge holes on turbine blade tips allow for higher combustion temperatures

Harmful hot gases from the combustor leak across the gap between the blade tip and the shroud (see Figure 2). Dirt purge holes expel foreign particles from the blade tip so that film cooling holes are not blocked.

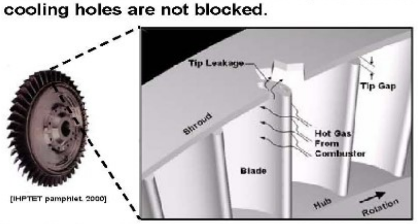


Figure 2. Flow at the tip region of a turbine blade.

The project goal was to find the film cooling effects of these dirt purge holes

To find the effects, we performed wind tunnel experiments with scaled turbine blades. The wind tunnel was low speed and low temperature, and the blades, shown in Figure 3, were scaled at 12 times their normal size. To measure temperatures on the blade tip, we used an infrared camera. Tip gap sizes and amount of coolant flow from the dirt purge holes were both varied.

Figure 3. Large-scale turbine blade in wind tunnel.

Temperature measurements were converted to dimensionless cooling effectiveness

Effectiveness $$\eta = \frac{T_\infty - T_{aw}}{T_\infty - T_c}$$ where T_∞ = mainstream temperature, T_c = coolant temperature, T_{aw} = adiabatic wall temperature (on tip surface)

Cooling increased with blowing ratio

The effectiveness contours of Figure 4 show that cooling increased with blowing ratio.

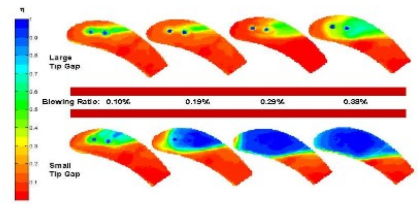


Figure 4. Measurements of film cooling effectiveness.

Tip size dramatically affected cooling

In Figure 5, the lateral averages of effectiveness plotted against the axial chord length show that tip size dramatically affected the cooling.

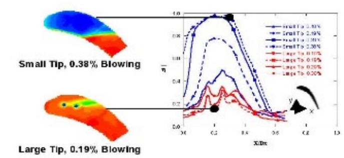


Figure 5. Laterally averaged effectiveness plotted against normalized axial chord.

In summary, dirt purge holes provide cooling to the tip surface

While intended to remove dirt from the blade, dirt purge holes also provide cooling to the tip surface. This cooling is enhanced with a small tip gap as the dirt purge floods the tip region near the leading edge with cool air.

Acknowledgments

The sponsor for this project was Pratt & Whitney.

http://www.writing.engr.psu.edu/samples/couch.jpg