Gaze Tracker

Development of an accessible method for robustly tracking gaze to be easily integrated into other diagnostic tools.

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UPDATES FROM AMY

*14 JUL 2014 3:14PM* - Important milestones to complete before start of day on Tuesday:

1. thoroughly answer sections 1.1, 1.2, 1.3, and 1.4 in the outline below!!! We need to all understand the answers to those questions before moving forward with implementation. I have filled in some of the information to guide you on what we are doing.

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Starting outline for a technical paper

Ramesh Raskar, 2010<http://web.media.mit.edu/~raskar>

(For imaging papers in Graphics/Vision/HCI)

**Title**:

Make sure the title is descriptive. Ideally should describe the 3 elements: principle, goal, method (e.g. ‘Coded Exposure Photography: Motion Deblurring using Fluttered Shutter’). During the review phase, you don’t have to be very clever about the title. You can come up with a better name (or a spiffy shorter name for your project) during the camera-ready round.

# **Abstract**

Start with single or two sentence summary of the key idea of your project. (e.g., We describe reversible modulation of 4D light field by inserting a patterned planar mask in a camera.).

What are you trying to accomplish?

Build a gaze tracker which is (1) low cost, (2) does not require time consuming calibration steps, (3) robust and accurate within 2 degrees, and (4) and able to be integrated into the Super Stereo project and other ophthalmic tools

•How is it done now, and with what limitations?

Answer here

•What is truly new in your approach which will remove current limitations and improve performance? How much will performance improve?

Answer here

•If successful, what difference will it make?

Answer here

• What is the performance and what are the applications your are showing in this paper?

Applications: proof of concept gaze tracking, gaze tracking in infants for pediatric acuity, gaze tracking implemented in super stereo project

# **1** **Introduction**

Expand on the questions in Abstract.

## 1.1 Motivation

What problem are you trying to solve and why?

Gaze tracking without significant calibration steps so that it may be used with infants and in use cases which require quick real time tracking.

Why is the problem you are solving important?

Answer This functionality will allow gaze tracking to be integrated into tools and tests where it could not previously be used. This information in these contexts can be very useful for clinicians and researchers.

Will this paper solve it today or later?

Answer This project which show proof of concept and at least one application

If this is important, are others also working in this area, and how you are different.

Answer here

## 1.2 Contributions

Usually in two categories: the concept and the technique. You need to have atleast one strong novelty claim (We are first to do xyz). Beyond the problem statement, what new generalizable technique have you produced, what are the key observations. Whatever claims you make, backup with proof in 'Performance Evaluation' section

What is new about this idea?

Answer here

What is new about how we’re doing it?

Answer here

## 1.3 Related Work

Try to classify into categories. At the end of each para, explain why your paper has something new. If your work is a followup, just be upfront about it.

Answer here - both research papers and commercial products

## 1.4 Limitations and Benefits

Do not sugarcoat limitations. The best is to have a whole section on limitations. Clarify all limitations the reviewer can think about, this is a preemptive strike.Depending on the conference, reviewers may expect a fully working solution so you must explain how far you are able to go today. Limitations can be conceptual, algorithmic and laws of physics. Don’t talk about limitations of your implementation here (e.g. our framerate is low) because that can be overcome. Show that you have evaluated the limitation, not just stated them.

# **2** **Method**

(For every section as well as paragraph, first sentence should be the 'conclusion' of what that section or paragraph is going to show). Use plenty of figures to setup the notation for your algorithm.

# **3** **More Second Order details**

# **4** **Implementation**

Describe software and hardware components, time of execution, cost of elements (where you bought them)

# **5** **Results**

## 5.1 Performance Evaluation

What are the specifications of your solution? Can you show them?

## 5.2 Validation

Comparison with ground truth data

What were your claims in ‘contributions’ can you validate with ground truth data?

## 5.3 Demonstration

Visual and empirical demonstration of results

When you are writing a system paper, you DONT have to show all novel techniques working in a SINGLE demo. You can show one novel technique at a time as a proof of concept. Then maybe show one more complex demo that shows off multiple of those techniques.

# **6** **Wait there is more**

Couple of bells and whistles

What are some other related things you can achieve

Maybe your theory generalizes to solve problem other than the focus of this paper.

# **7** **Discussion and Issues**

How could this transition to the end user? What is the path to get there? How much will it cost?

## 7.1 Future Directions

Take each subcomponent of the system. And explore its future. Use Raskar's Idea Hexagon if you run out of ideas http://www.slideshare.net/cameraculture/raskar-ideahexagonapr2010)

What are some parallel developments (e.g. in hardware, in physics, in algorithms) that will benefit this kind of work?

How will your work benefit parallel world (beyond graphics/vision/HCI)?

# **8** **Conclusion**

First sentence should be obvious what is new here.

You can make some big claims here( even if they are not substantiated) about where this work could go and whom it may influence.

Explain how your paper will spur more research in this area.

# **9** **References**

INCLUDE THE PAPERS YOU FIND AND REFERENCE HERE