PROJECT PROPOSAL

OUTLINE
• Purpose of proposal
• What is important and what is not
• General structure for proposal
  • Introduction
  • Previous/related work
  • Research question
  • Methodology
  • Timeline

PURPOSE OF PROPOSAL
• Define a clear question and approach to answering it
• Highlight its originality and/or significance
• Explain how it adds to, develops (or challenges) existing literature in the field
• Persuade supervisors and/or funders of the importance of the work, and why you are the right person to undertake it

WHAT IS IMPORTANT AND WHAT IS NOT
• Essentially need to explain 3 key components:
  • What you want to do?
  • How you’re going to do it?
  • How long you think you will take to get it done?
• Convince others that you should be allowed to do research
  • Show your knowledge on the topic & your efforts on preparatory work
• The following is not as important:
  • Whether you stick on the topic
  • Whether you use the proposed method to solve the problem

GENERAL STRUCTURE
• Title
  • Descriptive & relatively short
• Abstract
  • 130~250 words
• Introduction
  • 1~2 pages
• Previous/related work
  • 2~4 pages
• Research question
  • ~1 page
• Methodology
  • 2~4 pages
• Timeline
  • ~1 page
• Bibliography
  • 15~30 references

ABSTRACT
• Describes the proposal in brief
  • Introduce the topic and previous work in one sentence each
  • Followed by a sentence encapsulating motivation and research question
• General format:
  • XXX is a very important problem
  • Though there is much previous work for XXX, none of them can handle case YYY
  • In our work, we will propose an approach for YYY using ZZZ
**INTRODUCTION**

- Explain why this project is worth doing
  - Originality: What will be done in this project that has not been done before?
  - Applicability: Why this is important?
- Need to describe previous/related work as context for proposed work
  - Highlight the hole in previous work that the proposed research will fill
  - Do this briefly
- Back up statements with citations
  - Establish the truth of your statements
  - Show that you’ve put in the requisite preparatory work

**RESEARCH QUESTION**

- Explain what specific problem(s) you will be addressing in your project
  - The precise form of the research questions depends on the research topic
  - Much easier to define if the research was inspired by open questions in the literature
- The research question(s) should:
  - Be well-motivated by the preceding proposal sections
  - Be answerable using methods described in the subsequent section
  - These questions are the central pivot on which all else in the proposal depends and operates

**PREVIOUS/RELATED WORK**

- Discuss in detail what has been done before
  - Can be either directly or indirectly related to the proposed project
- Also highlight what has not been done previously and what you plan to do
  - Provide a natural bridge to the following sections in the proposal
  - Make effort to organize existing work
    - X made the pioneer work, which is further enhanced by Y & Z
    - A well-done previous work section can be a research contribution by itself
  - Propose a taxonomy to classify existing work

**WRITE A STORY**

- A natural way of organizing introduction is to develop a story
  - Overview of the concepts, terms & issues involved
  - Place your project in the greater context by starting with a more general scope
  - Then identify an area of the field which has been ignored or understudied to contribute a solution to that problem

**METHODOLOGY**

- Propose a solution to solve the problem you identified
  - Methods are typically described in general terms, with appropriate literature citations for details
  - These descriptions must be specific enough to allow explanations of how these methods can be used to answer the posed research questions
  - Cannot rely on magic
  - Provide details of the algorithms and program logic you plan on using

**TIMELINE**

- Describes your anticipated course of progress in the proposed research
  - The emphasis here is on “anticipated”
  - Experienced researchers know things seldom go according to plan
  - The timeline must be believable
    - Be as specific as possible when describing research activities
    - Budget for some difficulties when establishing dates
  - Present the timeline
    - The simplest list form is often sufficient
    - Using a graph (Gantt chart) can be more intuitive

**RESEARCH QUESTION**

- “Reconstructing 3D models of real objects has been an active research topic in both Computer Vision and Graphics for decades. A variety of approaches have been proposed for different applications […]
  - While these techniques can faithfully capture and reconstruct the shapes of opaque or even translucent objects, none of them can be directly applied on transparent objects. As a result, people often have to paint these transparent objects before capturing their shapes…
  - This paper presents a fully automatic approach for reconstructing complete 3D shapes of transparent objects with known refractive indices…”
Try different configurations of the triplet loss-based deep neural network scheme.

Investigate dense facial feature positioning deep neural network framework.

Design schemes to deal with partially occluded faces caused by e.g., glasses.

Design new neural network architectures to exploit regional differences between the ID photos and wild input photos.


Investigate how to combine different techniques to improve the overall performance of the system.

**BIBLIOGRAPHY**

- All references should be:
  
  - Complete & correct in detail
  
  - Consistent in format
  
  - Ordered alphabetically by author name
  
- Compiling a good bibliography requires efforts
  
  - Play an important role in convincing others that you can be trusted to do research