

Automatic multi-camera editing of cinematographic rushes

Masters Thesis Internship Proposal

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December 2023

Objectives

This master internship is proposed in the context of the WICED editing competition organized jointly by BBC Research and the International workshop on intelligent cinematography and editing (<https://project.inria.fr/wiced2024/wiced-editing-competition/>). The long term goal of the competition is to inspire and showcase the state of the art in automated editing systems and multimedia processing techniques.

Goals

The goal of the internship will be to devise new methods for automatically generating an edited movie from a collection of synchronized, high resolution video footage. We will decompose the problem into two parts:

1. Automatic generation of cinematographic rushes with various shot sizes and compositions (close-ups , medium shots and long shots of selected actors).
2. Automatic multi-camera editing of the generated rushes into a linear movie showing the action in the best possible angle at every time.

In previous work, we proposed efficient methods for solving the first problem (Gandhi 2014, Ronfard 2022). The goal of the internship will be to design new methods for solving the second problem.

Based on a review of related work (Aerts 2016, Leake 2017, Chen 2018, Stoll 2020, Hu 2021, Lee 2022, Huang 2022, Stoll 2023), the candidate will propose new methods for improving the state of the art in the context of the WICED editing competition. A key insight to make this problem tractable is that the generated rushes from our previous method can be easily annotated with shot sizes and compositions. Using this information, a possible approach will be to model the process of multi-camera editing as an optimization in a space of « film editing graphs » (Galvane 2015). The goal of the internship will be to demonstrate the feasibility of this approach and to evaluate the quality of the results using the BBC OLD SCHOOL dataset made available by the WICED editing competition.

If successful, the internship can lead to a PHD on the same topic.

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