VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI – 590 018

PROJECT REPORT ON

"DYNAMIC VIDEO STITCHING VIA SHAKINESS REMOVING"

Submitted in partial fulfillment for the award of Degree of,

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

By

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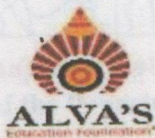
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that the project entitled **"DYNAMIC VIDEO STITCHING VIA SHAKINESS REMOVING"** has been successfully completed by

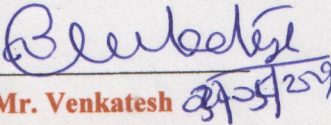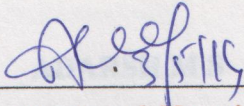|	
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the bonafide students of **DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING, ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2018–2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

Stitching videos captured by hand-held mobile cameras can essentially enhance entertainment experience of ordinary users. However, such videos usually contain heavy shakiness and large parallax, which are challenging to stitch. We propose a novel approach of video stitching and stabilization for videos captured by mobile devices. The main component of our method is a unified video stitching and stabilization optimization that computes stitching and stabilization simultaneously rather than does each one individually. In this way, we can obtain the best stitching and stabilization results relative to each other without any bias to one of them. We propose an optimized method to identify background of input videos, and also common background of them. This allows to apply our optimization on background regions only, which is the key to handle large parallax problem. Since stitching relies on feature matches between input videos, and there inevitably exist false matches, we thus propose a method to distinguish between right and false matches, and encapsulate the false match elimination scheme and our optimization into a loop, to prevent the optimization from being affected by bad feature matches. We test the proposed approach on videos that are causally captured by smartphones when walking along busy streets, and use stitching and stability scores to evaluate the produced panoramic videos quantitatively.