

# technocamps

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## Open CV Workshop Content



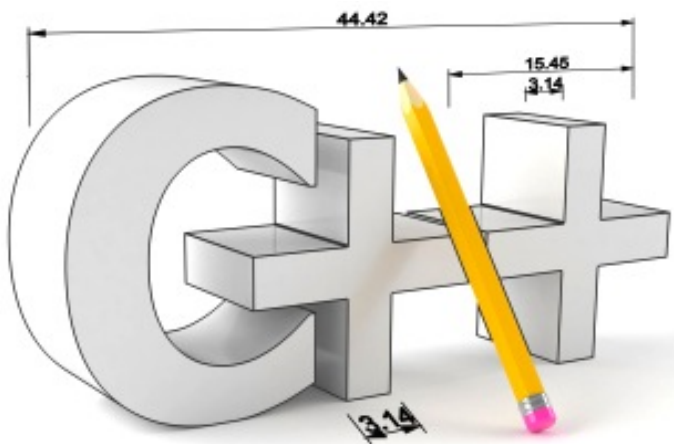
# OpenCV

Programming, recently introduced to core curriculums across the UK, can come in any different forms. Programming environments can range from basic, colourful introductory level software such as Scratch or App Inventor to complex languages often used within the industry. This workshop introduces participants to an industry language, heavily supported through work books, fun activities and friendly staff. OpenCV uses C++, one of the most popular programming languages.



Computer vision is the understanding of producing and processing images and image analysis. This field is often linked with technology development and Artificial Intelligence, acknowledging, recognising and interacting with a machine's environment.

OpenCV is a large open source C++ library for image processing and computer vision. It has hundreds of built-in functions and algorithms that can be used to perform real-time image processing. As OpenCV has so many built in functions, it makes developing your own computer vision applications easy and you will become more and more confident using it.



You can download OpenCV for free from:

<http://opencv.org/downloads.html>

The software can be downloaded for either Windows, Mac or Linux.

# OpenCV

Throughout the workshop, participants will be introduced to a variety of Computer Vision techniques and coding techniques. Initially the group will be introduced to Visual Studio, an Integrated Development Environment (IDE) created by Microsoft. OpenCV will be configured with Visual Studio for the workshop, this can be replicated at home or in school (providing a Windows operating system is used or a virtual box that can host Windows as a guest operating system).

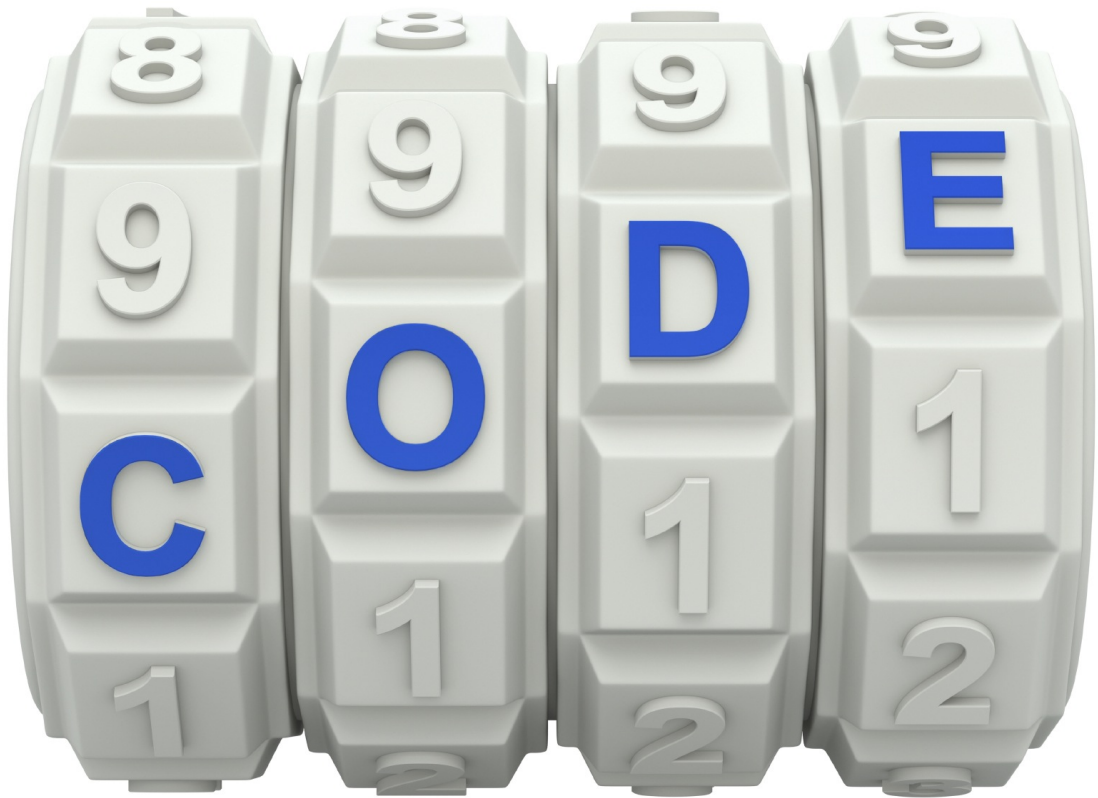


The Visual Studio environment will be introduced to the group, explained and various code examples will be broken down with the participants. Once a confidence has been developed with the VS environment and the C++ programming language, the participants will move onto trying out various image coding techniques.

The group will be introduced to the concept of Computer Vision, the similarities with human vision (e.g. mistakes manipulated through optical illusions), what computer vision can be used for and how these techniques can be implemented.

OpenCV can be used to achieve the following:

- Object Identification & Recognition
- Face and Gesture recognition
- Ego-motion (camera stabilization)
- Human Computer Interface
- Image Processing
- Mobile Robotics
- Motion Tracking & Understanding
- Video surveillance
- Structure from Motion
- Industrial inspection
- Medical image analysis
- Topographical modelling



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