AN ACCESSIBLE AI IMPLEMENTATION

PROBLEM DEFINED

- There is a lack of access to guide dogs. In the UK the average time has increased, from 12 months to 18 months. Some waiting up to 3 years and beyond.

- Infrastructure is often poorly placed, with little thought to the experience of those with visual impairment

- AI development is often developed with a normative bias

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EXAMPLES OF POOR INFRASTRUCTURE
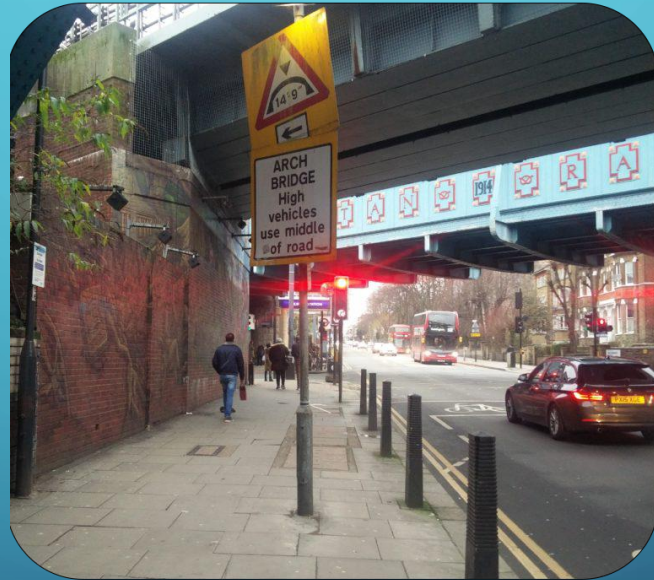
WHAT IS THEIA?

Theia is a program that combines three AI models to create a single accessible experience.

It aims to provides relevant contextualised information, with the aim to enable greater movement independence.
The idea is to identify hazards, such as obstacles, steps and crossings, while also relaying information about path direction. This main feature is complemented by a second mode, which provides rich descriptive information about the scene before the user.

Theia is a software layer that can be run on any tensor enabled device such that it can, with the addition of a waterproof webcam and bone conduction earpiece, become a visual aid.
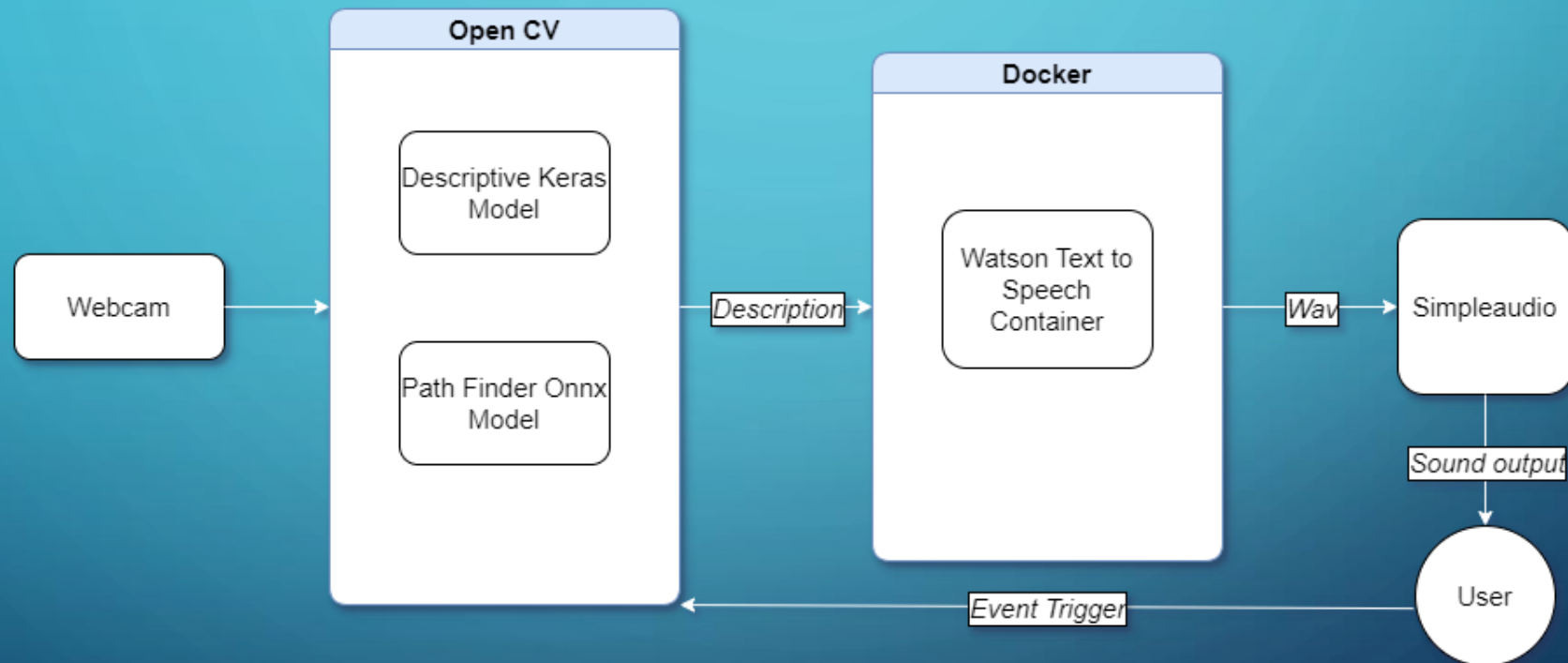For example a tensor enabled laptop can be place inside a waterproof backpack or a small embedded AI system (Raspberry Pi or Jetson device) can be placed in a waterproof satchel.

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HOW DOES THEIA WORK?
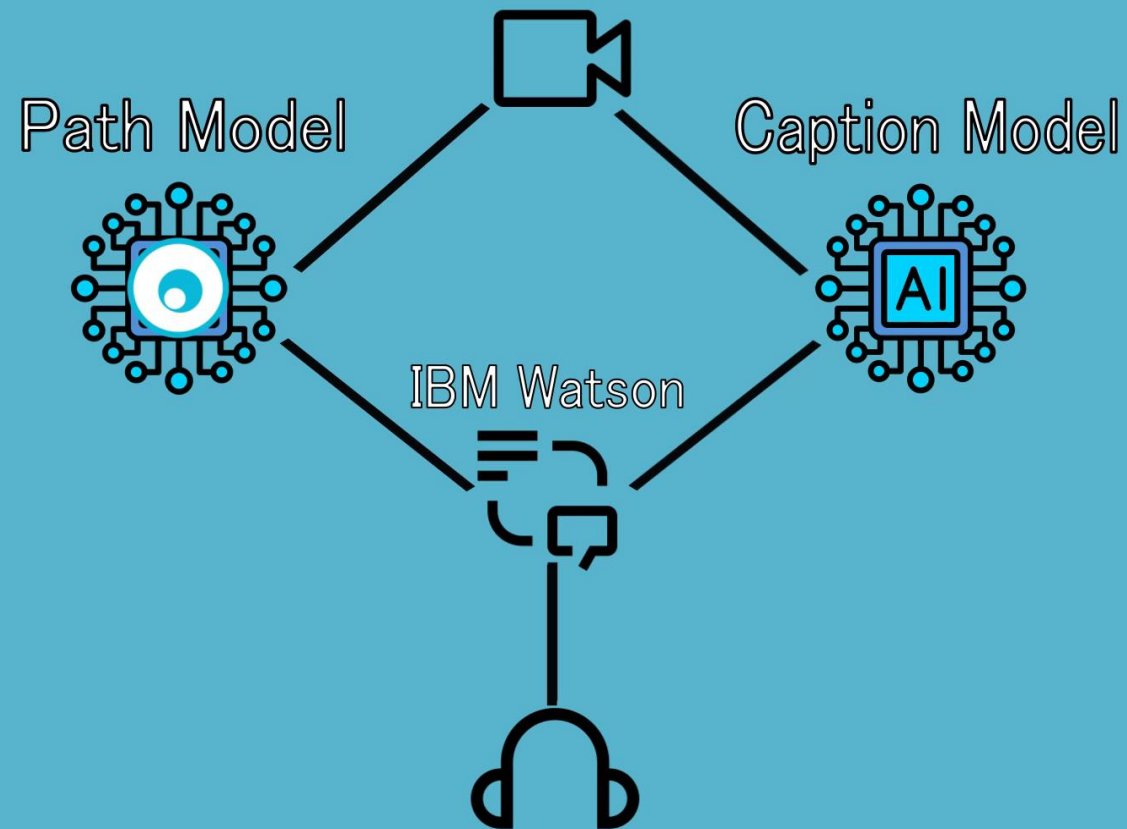
THEIA'S MODES

1. Path Mode

   - Path mode delivers a contextualised experience
   - Aims to provide information that will alleviate the issues caused by a lack of guide dogs and poorly placed infrastructure

2. Descriptive Mode

   - Delivers rich descriptive language about the scene before the user. Such that can have a picture painted with words

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Two Modes

Descriptive   Path

ROAD MAP

1. Laptops
   - Create a working MVP for ubuntu and windows operating systems

2. Embedded AI devices (jetson and raspberry Pi)
   - Port the application to aarm64 architecture
   - Work on optimisation

3. Cloud and mobile device
   - Experimental phase focused on testing the viability of moving the application to mobile devices via the cloud, using the 4g and 5g network

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TECHNOLOGIES

- Open CV
- Python and Kotlin
- Keras
- Onnx
- Multilabel Classification
- Caption Models
- Cuda
- Bash
- Powershell
- Tensorflow

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