The study successfully demonstrates that water turbidity can be estimated with high accuracy.

It uses only a smartphone camera and a simple CNN architecture.

Confirmed under various settings:
- Containers: Glass vial, clear and tinted plastic bottle.
- Water colour: clear and yellow concentrations.
- Lighting: artificial and clear.
- Holder: tripod and handheld.

Introduction
- Water is essential for humans
- Water quality is measured using turbidity
- It is the scattering or attenuation of light from a variety of sources
- Measured in NTU
- Not a direct threat, but quick and reliable measure
- The solution is simple and widely available considering that 63% of the global population has access to a smartphone

Methodology
- Data Collection:
  - No readily available dataset
  - Turbidity can be seen as a form of blur
  - Settings to minimize in-camera preprocessing and blur
  - Artificial samples 0 – 40 NTU
- Preprocessing:
  - Remove unnecessary elements of the original image and create smaller images that focus only on the parts where the blur is best seen
- Model Architecture:
  - Small model to make inference as efficient as possible

Results
- Successfully demonstrates that water turbidity can be estimated with high accuracy by only using a smartphone camera and a simple CNN architecture
- The CNN achieves high performance when trained from a sample of that dataset for the 0 – 40 NTU range, which is the common range for drinkable water turbidimeters
- The experiments were conducted in a way to reproduce field conditions as closely as possible

Further Work
- Further relaxation of the controlled conditions to make the methodology for the data collection simpler for its exploitation in the field
- Extensions such as data augmentation or domain adaptation to improve generalisation properties

Table reflecting the datasets, the number of images, accuracy and root mean squared error for each of the datasets.