bilberry

C++ Engineer

Technical challenge

Contact to reach out in case of questions about the exercise:

Camille Demasson

📧 camille_demasson@trimble.com

Recruitment contact:

Anastasiia Krestianska

📧 anastasiia_krestianska@trimble.com

Context

At Bilberry, we use pictures taken from our cameras to recognize some plant species. In order to associate the position of the plants with the sprayer nozzle to open, it is important to link the content of our picture with the camera position; this is what we call calibration.

Your challenge

From the picture given as an input with this document, we want to be able to analyze the data contained in the space defined by the A4 sheet considering its position in the real world.

Exercise goal: develop a calibration software.

Develop a software that asks for a user input of 4 clics on the rectangle corners on the given picture calibration.jpg. From these 4 points:

- Draw highlighted lines on the rectangle borders.

Example of the expected result:

- From their coordinates and the data in the annex, give the position of the camera.

Requirements

- CMake
- Run under linux
- C++17

Annex

Camera parameters

- Aperture
  - height: 4.224 mm
  - width: 5.632 mm
- Field of View
  - horizontal: 39°
  - vertical: 29.6°
- Camera + Lens distortion:
  - k1: -1.2093325853347778
  - k2: -1.041786551475525
  - k3: 64.01393127441406
  - k4: -0.5568028688430786
  - k5: -3.6638600826263428
  - k6: 78.03067016601562
  - p1: -0.004819112829864025
  - p2: -0.0027203019708395004
- Intrinsic parameters
  - cx: 1280
  - cy: 960
  - fx: 3751.937744140625
  - fy: 3821.9775390625
- Resolution
  - height: 1920
  - width: 2560