



上海交通大学巴黎卓越工程师学院
SJTU Paris Elite Institute of Technology

综合实践项目中期检查报告 Mid-term Report of Practical Project

课题名称 Topic:

Machine Vision-based Intelligent Recognition of Building Air
Conditioning Interface

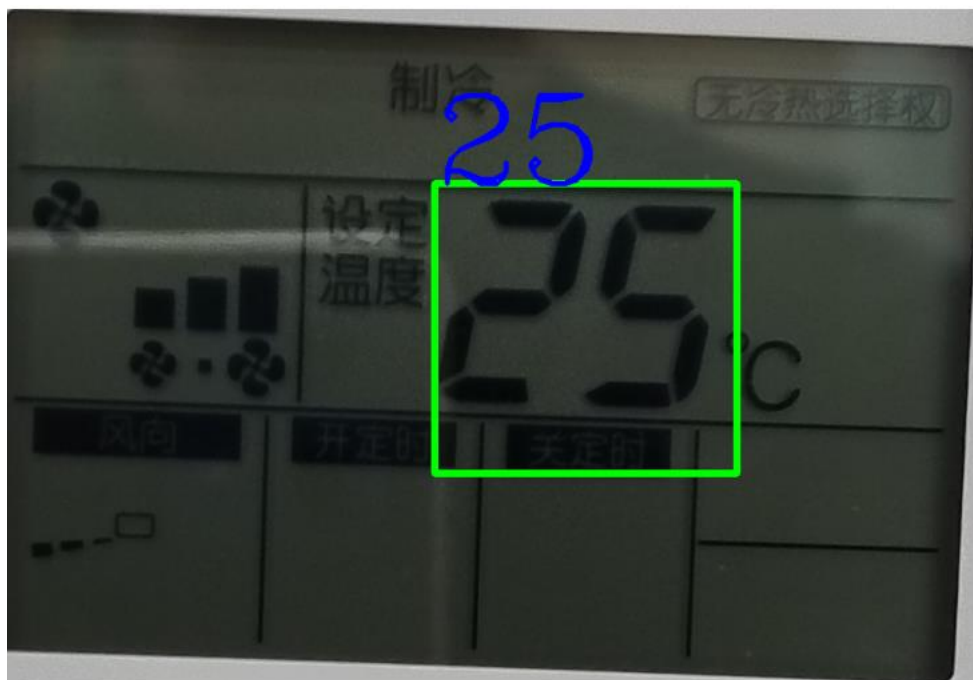


Figure 1: Illustration of our project's first result

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学生姓名 Student: **Babic Marko** 学号 Student ID: **J12426099007**

专业名称 Major: **Computer Science - Information Engineer**

学院(系): 巴黎卓越工程师学院 SPEIT



综合实践项目课题的基本内容与要求:

Main research content and requirements of your project:

Main research content

The purpose of this project is to establish a model capable of reading the digits from an air-conditioner (AC) interface, from our own pictures.

In fact, we took two hundreds of pictures with a smartphone of AC's interfaces in the SJTU campus. Our goal is to be able to read as many as possible even if they have visual problems. Indeed, some images can be taken with different angle, with different brightness or with reflections.

Requirements and tools used

Here are the 3 requirements we did:

- ✚ **Take 205 pictures of AC:** many different AC on the SJTU campus where we could take pictures with different angles, zoom, brightness, reflections. During free time on the campus, after a course, while visiting different schools of SJTU. Some pictures do not have digit.
- ✚ **Establish a model that can read 1 picture:** we had to establish our tools, install packages, test different python libraries, learn to adapt the image before the reading, manage technical issues...
- ✚ **Establish a model that can read at least 5 pictures:** the solution was to separate the pre-process of the image in 2 part. One part is dedicated to crop only the screen of the AC. The other part is to focus only on the way we make the image more blurred. Cropping helps to reduce the time of reading the image. Blurring helps to read only the digits and not the other information on the screen.

Concerning the tools, the programming language we decided to use is **Python** for his accessibility and for the reason that is a programming language easier to pick up even if other programming languages are better in term of performance.

We used **Pycharm** (developed by JetBrains) as our python Integrated Development Environment(IDE) with a python version 3.12.

Moreover, we needed different libraries in order to achieve our project at this point:

- **cv2:** An open-source computer vision library that provides a wide range of image and video processing functions.
- **Numpy:** A fundamental package for scientific computing with Python, providing support for arrays, matrices, and a variety of mathematical functions.
- **Matplotlib:** A plotting library used for creating static, animated, and interactive visualizations in Python.
- **Easyocr:** A simple, easy-to-use OCR (Optical Character Recognition) library that can recognize text from images with high accuracy with many parameters.



综合实践项目进度安排 Researching plan:

No.	各阶段内容 Progress	时间安排 Period	备注 Notes
1			
2			
3			
4			
5	Find a supervisor and start of the project	10 th – 12 th October	Short amount of time
6	Taking 200 hundreds of photos in SJTU	13 th – 19 th October	Long task
7	Testing different python libraries	20 th – 27 th October	Many technical issues related to installations
8	Establishing a first model capable to recognize 1 picture	28 th October– 4 th November	Find strategies on the image processing so as to isolate the digits
9	Testing and upgrading the first model	4 th – 14 th November	Separate the different functions of the code and upgrade each one
10	New version capable of reading at least 7 pictures. Finishing the midterm report.	15 th – 21 th November	A code more organized

学生签名 Student signature:

日期 Date(YYYY-MM-DD): 2024.11.18



指导教师意见 Comments from supervisor:

The project is currently progressing smoothly and meets the schedule requirements. It is recommended to continue the research work as planned.

指导教师签名 Supervisor signature: _____

日期 Date(YYYY-MM-DD): 2024.11.18

学院（系）意见 Comments from institute:

院长（系主任）签名 Dean signature: _____

日期 Date(YYYY-MM-DD):