Character recognition by deep learning classifier (exam task)

The data set contains small black and white images labelled with character identifier. The task is to recognize the character (0-9, a-z, A-Z) of unknown images in the test set by deep learning classifier without any human activity (human's help is equivalent to cheating).

Work out a deep learning classifier model, and train this model by the training dataset! Use cross-validation in order to measure the goodness indicators (accuracy, AUC) of your model! Please pay attention to the parameter optimization! Please investigate the model, the result and describe the details of your solution!

So there is a train data set with label information, and the task is to predict the classes in test data set. The exam task consists of the following subtasks:
- Building a classifier model for prediction.
- Please upload your prediction file to the Moodle until the end of the teaching period!
- Please present the result and describe the details (5-10 pages) of your solution! This report should be uploaded to the Moodle 5 days before your exam, and it should contain:
  - Front page (name, etc.)
  - Alternative possibilities and the phases of the solution
  - Estimated goodness of the prediction
  - Summary / Conclusion

Based on the predicted file the teacher will calculate the goodness indicators of the test set.

There are two parts of the exam:

- Presentation of the solved exam task by machine learning software used during the homework. (3-6 minutes, and PPT is not required)
- Oral exam: answering the exam questions about the theoretical part of the course.