Traineeship in Banknote Research and Development

Your team
The Directorate Banknotes makes sure euro banknotes are an efficient means of payment which is well protected against counterfeiting. Everything from the technical specifications for banknote design and production to quality management, health and safety and security falls under its remit.

The Research and Development (R&D) team sponsors and monitors activities in the field of banknote research and development. R&D activities focus on all technological aspects of banknotes, including security features, substrate, production processes and tools for quality control and readability of the banknotes.

Your role
As a trainee you will:

- apply computational methods to the multi-disciplinary field of banknote security, including printing processes, machine readable features, diffractive foils, photonics spectroscopy, hyperspectral imaging, artificial vision and high-speed cash processing;
- develop algorithms or simulation models to be applied to new security features or processes related to the production and processing of euro banknotes;
- participate in the development of proof-of-concept applications of artificial intelligence and neural networks in the field of banknote security;
- analyse and process digital images of banknotes in order to develop new ways to authenticate banknotes or assess their production quality;
- coordinate or support tasks related to the data collection of images and measurements of euro banknotes, using, for example, spot colorimetric measurements, hyper-spectral imaging devices or RGB scanners;
- handle data, information and software versions in a structured way, ensuring easy transfer to, and usage by, third parties.

The position offers you an excellent opportunity to learn about the technology involved in banknotes and contribute to the banknotes of the future. Our work is of a confidential nature and some working topics cannot be disclosed in detail. For the same reason, work carried out during the traineeship may not be published.

Qualifications, experience and skills
Essential:

- a bachelor's degree or higher in applied mathematics, engineering, computer science, physics or a similar field;
- an advanced knowledge of computational mathematics or modern artificial intelligence methods, proven by a strongly focused background and/or practical experience;
- fluency in at least two computer languages used in scientific computing, such as C, C++, Fortran or MATLAB;
- a good knowledge of MS Access.

Desired:

- experience in using image processing tools or libraries;
- a master's degree or PhD in one of the above-mentioned fields.

Further information
You should also submit a complete list, in English, of your postgraduate and undergraduate courses and related grades. The list of courses and grades does not have to be officially issued by your academic institution but can be prepared by you.