



**UBISOFT**

# R&D Programmer Assistant – Gen AI for Level Design – La Forge (6 months internship)

Bordeaux, France

Intern

Flexible Working Organization: Hybrid

## Company Description

### About Ubisoft

Ubisoft's 20,000 team members, working across more than 30 countries around the world, are bound by a common mission to enrich players' lives with original and memorable gaming experiences. Their commitment and talent have brought to life many acclaimed franchises such as Assassin's Creed, Far Cry, Watch Dogs, Just Dance, Rainbow Six, and many more to come. Ubisoft is an equal opportunity employer that believes diverse backgrounds and perspectives are key to creating worlds where both players and teams can thrive and express themselves. If you are excited about solving game-changing challenges, cutting edge technologies and pushing the boundaries of entertainment, we invite you to join our journey and help us create the unknown.

### Ubisoft Bordeaux

Founded in September 2017, Ubisoft Bordeaux works with passion on the biggest AAA's game in order to offer the best gaming experiences to our players. Today, the studio has more than 400 talents, from 15 different nationalities, who work on licenses such as Assassin's Creed, Beyond Good & Evil 2, plus other unannounced free-to-play games. We are also working on exciting technologies with the Anvil team, Online services teams and with La Forge who seek to validate the value of technological innovations.

### La Forge

As Ubisoft's research and development group, La Forge brings together experts from the industry and academic sector to prototype technological innovations and improve the game-making process. With this focus on applied research, we aim to fill the gap between theory and practice, while contributing to solving real-world problems through scientific publications.

## Job Description

The quality of Generative Models (GMs) has greatly increased during the last years and months as shown with the emergence of text-to-image models (like Imagenet, stablediffusion, Dalle-3,...), text-to-speech, or even text-to-3D systems. Such approaches rely on the ingestion of large-scale datasets by deep learning models such as Diffusion Models and more recently, transformer-based systems (e.g. Vision Transformers). As an output, these models allow conditional generation of complex outputs, but also inpainting of missing parts, style control, composition of the outputs, etc... They thus allow to conceive efficient tools to foster creativity. In the video game domain, the application of these tools is obvious when talking about visual assets, 3D assets, speech, etc... But they can be impactful for other applications.

In this internship, we target the use of generative models for procedural level generation (PCG). Indeed, there is a strong need to provide tools for designers to generate world-sized games, but also tools that allow players to create content by themselves.

Conditional PCG has been explored mainly with the angle of evolutionary algorithms. The principle is, given a conditioning (e.g some provided characteristics of the level), to generate thousands of levels.

Then all the levels are evaluated by automatic systems such that only the level that correctly answers the conditioning are returned to the creator. But this approach has two main drawbacks: the first one is that it is well suited for simple conditioning, and not able to consider complex ones like textual

inputs. The second one is that they have a low generation speed since they need to, real-time, evaluate the generated levels to get only the best ones.

We thus propose to focus on the use of recent data-driven generative methods (aka diffusion models, large language models) to generate complex levels. As an advantage, it will make possible to condition the generation on complex inputs, including text. But it would need to have access to a large dataset of levels, which seems impossible. We will consider several directions: a) the use of external information sources like geographical datasets (e.g google maps, wikipedia) b) the automatic generation of datasets (e.g. using bots to evaluate randomly generated levels), or c) making local-generation assumptions to artificially augment available datasets (e.g. generating pieces of levels rather than entire levels).

The internship will be executed using the set of tools developed in La Forge which include realistic multiplayer 3D games made specifically for research, large datasets of traces and learning algorithms deployed on GPU clusters.

## Qualifications

Last year student of an engineering school or a university research master;

Solid Knowledge in mathematics and computer science

Skills in deep learning, reinforcement learning, Python, PyTorch/Tensorflow

Your level of English allows you to communicate easily with non-French speakers.

Skills and competencies show up in different forms and can be based on different experiences, that's why we strongly encourage you to apply even though you may not have all the requirements listed above.

## Additional Information

### Process:

- Phone Interview with a recruiter
- Technical assesement
- Interview(s) with our internal teams

If your application is not retained, you will receive a negative answer.

*At Ubisoft, you can come as you are. We embrace diversity in all its forms. We're committed to fostering a work environment that is inclusive and respectful of all differences, we value diversity at our company and do not discriminate on the basis of race, ethnicity, religion, gender, sexual orientation, age or disability status. All personal informations will be treated as confidential according to the Employment Equity act.*

Check out [this guide](#) to help you with your application, and learn about our actions to encourage more diversity and inclusion.



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Posted by  
**Marie Piquot**

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