

**Education**

2015 – 2018 **University of Edinburgh**  
**PhD student at the Institute for Languages, Cognition and Computation**

Working on exploiting the raw computational power of GPUs to improve the performance of machine translation decoders. My supervisor is Adam Lopez. I am also a **tutor** and have been involved as a **TA** for second-year informatics courses in the areas NLP and Computer hardware.

2010 – 2014 **University of Edinburgh**  
**BSc Artificial Intelligence & Computer Science** (First Class honours)

Class rep; Mentor of a group of students tasked with creating a football-playing robot

**Selected publications**

2018 Nikolay Bogoychev, Marcin Junczys-Dowmunt, Kenneth Heafield, Alham Fikri Aji  
**Accelerating Asynchronous Stochastic Gradient Descent for Neural Machine Translation.**  
 In Proceedings of EMNLP, Brussels, Belgium

2016 Nikolay Bogoychev and Adam Lopez ***N*-gram language models for massively parallel devices.** In Proceedings of ACL, Berlin, Germany.

2016 Nikolay Bogoychev and Hieu Hoang **Fast and highly parallelizable phrase table for statistical machine translation.** In Proceedings of WMT, Berlin, Germany.

**Related Employment****University of Edinburgh, United Kingdom**

Jan 2019 – *Position:* Postdoc  
*Duties included:* Building a high performance neural machine translation inference system for consumer grade CPUs in desktop machines and laptops.

**Intel, Santa Clara, USA**

June – Oct 2017 *Position:* Parallel computing lab intern  
*Duties included:* Analyzing parallelism cost for RNNs, building theoretical computational models, improving RNN training performance in parallel setting

**Amazon, Berlin, Germany**

June – Oct 2016 *Position:* Machine Learning Intern  
*Duties included:* Porting existing software to pyspark. Profiling and optimizing Scala-on-Spark stack.

**Technical Skills:**

Programming C/C++, CUDA, python, Java, Haskell, Clojure, Scala, JavaScript, Hadoop, Spark, Matlab

**Notable projects**

**gLM** gLM the GPU based language model is an ngram language model implementation that can binarize an arpa encoded language model and then query it in batch manner on the GPU. It is coded in C++ and CUDA and is in active development and is eventually going to be used with a GPU based MT decoder.

*github:* <https://github.com/XapaJJaMnu/gLM>

**ProbingPT** A C++ efficient machine translation phrase table storage and query developed as part of my honours project. Currently part of upstream Moses.

*github* <https://github.com/XapaJJaMnu/ProbingPT>

## Contributions to Open Source projects

<b>python</b>	Add support for additional robots.txt parameters. Patch committed upstream. <i>issue and patch:</i> <a href="http://bugs.python.org/issue16099">http://bugs.python.org/issue16099</a>
<b>marian</b>	Implemented various improvements catered towards multi-device training; implemented multi-node training. <i>github</i> <a href="https://github.com/marian-nmt/marian-dev">https://github.com/marian-nmt/marian-dev</a>
<b>Moses</b>	Implemented a Bilingual language model feature function a la <i>Devlin et al 2014</i> . Debugged multithreading performance and committed various small fixes. <i>github</i> <a href="https://github.com/moses-smt/mosesdecoder/">https://github.com/moses-smt/mosesdecoder/</a>
<b>wine</b>	Several simple patches adding support for new GPUs, committed to master.
<b>pyalienfx</b>	Add support for new model, patch is used by several owners of the related hardware <i>issue and patch:</i> <a href="https://code.google.com/p/pyalienfx/issues/detail?id=30">https://code.google.com/p/pyalienfx/issues/detail?id=30</a>

Please check out my **github** account for more samples: <https://github.com/XapaJlaMnu>  
More projects on **LinkedIn**: <http://www.linkedin.com/pub/nikolay-bogoychev/23/310/18>  
Personal webpage: <http://nbogoychev.com>

**Language Competences** Bulgarian (Mother Tongue), English (Fluent C2), Spanish (Fluent C1), German (B1), Mandarin Chinese (A2),

### Professional interests:

- Concurrency
- Multiprocessor programming
- GPGPU
- Performance optimization
- Machine learning
- AI, decision making and planning in particular
- Game theory

### Hobbies

I have a strong passion for languages and writing systems in particular. I spend most of my spare time learning languages and looking up peculiar linguistics information. I enjoy reading, particularly Fantasy and Science fiction novels.

### Sports

I enjoy playing Table tennis and Football. I have also practised Aikido.