

# Li-Wei Yap

## Personal Information

Date of Birth 09/03/1992  
Citizenship Singaporean (Swiss L Permit)  
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## Education

- 09/2016 – 08/2019 **ETH Zürich, M.Sc. Computational Biology and Bioinformatics** GPA: 5.43 / 6.0  
o Foci: machine learning; data structures & algorithms; parallel programming; numerical methods.  
o Thesis: *Rigorous comparison of Monte-Carlo (MC) and Quasi-MC integration for statistical inference in mixed-effects models.*
- 09/2013 – 06/2016 **Imperial College London, B.Sc. Biotechnology** Grade: First Class Honours  
o Focus: computational biology.  
o Thesis: *Computational model of cell-wall dynamics during bacterial sporulation.*

## Work Experience

- 07/2018 – 09/2018 **IntiQuan GmbH, Basel – Pharmacometrics Data Science Intern**  
o Statistical analysis of pre-clinical trial data using workflow in R. Results used to evaluate drug effectiveness for client.  
o Programmed pipeline in R for data simulation by statistical sampling. Performed extensive statistical tests on simulated data, e.g. likelihood profiling, and evaluated results in report.  
o Worked in Linux environment.

## Practical Experience

- 12/2018 – 07/2019 **ETH Zürich – Master Thesis**  
o Programmed numerical variant of machine learning algorithm in C++ for statistical inference on large biological dataset. (<https://git.bsse.ethz.ch/csb/qmcnlme>)  
o Achieved two-fold improvement in convergence rate of statistical inference.  
o Built statistical models by hierarchical inheritance / object-oriented programming.  
o Other tools used: Git for version control, CMake for code compilation, Eigen numerical library, and MPI for code parallelisation.
- 09/2017 – 06/2018 **ETH Zürich – Programming Lab Rotations**  
o Contributed to in-house developed deep learning library. Programmed algorithm in Active Oberon for unsupervised training of convolutional neural network for feature recognition in images.  
o Programmed fast streaming convolution component in Active Oberon for deployment on FPGA.
- 02/2016 – 10/2017 **Imperial College London – Visiting Researcher**  
o Programmed ODE model of bacterial cell-wall dynamics in Matlab.

## Programming Projects

- 10/2019 **Simulated stack-based CPU in C++** (<https://github.com/liweiyap/MyCPU>)  
o Parsing and disassembly of hexadecimal instructions into opcode and operand. Stack used to store results of computations. Catch2 used for software testing and CMake for code compilation.
- 10/2018 **Simulated protein folding in Matlab** (<https://github.com/liweiyap/ProteinFolding>)  
o Implemented Metropolis algorithm.

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## Computer Skills

Programming	<b>C++, CMake, R, Matlab:</b> <i>Professional and/or practical experience, and personal projects</i> <b>Python:</b> <i>Experience with machine learning and big data, e.g. Scikit-Learn, Pandas, NumPy</i> <b>Bash:</b> <i>Knowledge of writing short scripts to automate tasks</i> <b>HTML, CSS, Markdown:</b> <i>Designed personal website using these languages</i> <b>L<sup>A</sup>T<sub>E</sub>X:</b> <i>Experience with typesetting of thesis reports and résumés</i> <b>Active Oberon:</b> <i>Learnt obscure programming language for university lab rotations</i> <b>SQL:</b> <i>Completed crash-course on Coursera</i>
Version Control	<b>Git</b>
Software Libraries	<b>Catch2:</b> <i>Basic knowledge of testing C++ software gained from personal projects</i> <b>Eigen:</b> <i>Familiar with numerical methods in C++</i> <b>Boost:</b> <i>Basic knowledge of simple mathematical functions and the MPI framework in C++</i> <b>Jekyll:</b> <i>Built personal website using Jekyll framework</i> <b>Scikit-Learn, TensorFlow:</b> <i>University coursework in machine learning using Python</i> <b>Pandas, NumPy:</b> <i>University coursework in big data analysis using Python</i> <b>MPI:</b> <i>University coursework in code parallelisation on supercomputing cluster</i>
Operating Systems	<b>Linux, Mac OS, Windows</b>

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## Languages

English	Native speaker
German	Fluent; Goethe-Zertifikat C1
Mandarin	Intermediate; good working knowledge as citizen of Singapore
Swiss German	Basic
Cantonese	Basic

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## Scholarships & Awards

08/2016	C. Ewart Stickings Memorial Prize: <i>academic excellence (Imperial College London)</i>
08/2016	Life Sciences Dean's List: <i>top 10% of undergraduates (Imperial College London)</i>
05/2015	UROP Bursary: <i>£1000 sponsorship for summer research (Imperial College London)</i>
10/2014	Wiley Prize: <i>Top 3 first year biotechnology undergraduates (Imperial College London)</i>

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## Military Service (Singapore)

02/2011 – 12/2012	Achieved Outstanding Performance & Conduct in National Service (top <10% of cohort).
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## Selected Publications

- [1] **Yap L.-W.** & Endres R.G. (2017) A model of cell-wall dynamics during sporulation in *Bacillus subtilis*. Soft Matter. 13(44), 8089-8095.

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## Volunteering

06/2015 – 07/2015	Conservation of loggerhead turtles in Kefalonia, Greece
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## Hobbies

Social-deduction board games  
Comedies  
Football

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## Signature



Zürich, 16/12/2019