# Iván Lengyel

## Current Position

2014– **Research Assistant**, Instituto de Investigación en Biomedicina CONICET – Partner Institute of the Max Planck Society, Buenos Aires.

## Current Projects

**Somite masker**, a CNN to perform instance segmentation of somites in embryonic development videos using a small training dataset and data augmentation, *in progress*, deep learning, CNNs, instance segmentation.

**Quantification of precision of oscillations**, a new method to compute the quality factor based on period statistics which outperforms current methods by 50% in short time series, *ready to submit*.

**Cryptocurrencies trading bot**, a real time algorithmic trading bot using DNNs, *in progress*, machine learning, DNNs, python, features engineering, forecasting, algorithmic trading, technical analysis, quantitative analysis, cryptocurrencies.

## Research and Education

2014–2018 **Ph.D in Physics**, Universidad de Buenos Aires, Argentina, Qualification: Outstanding.
Oscilations and noise in gene expression: a dioalogue between theory and experiments

2016 **Visiting Scientist**, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany.

2012–2013 **M.S. in Physics**, Universidad de Buenos Aires, Argentina, Qualification: Outstanding.
Setting the time of the segmentation clock: gene regulation and new trangenic lines

2011 **Undergraduate Student**, Integrative Neurocience Lab, UBA, Argentina.
Supervisior: Dr. Mariano Sigman

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## Publications

2019 I. M. Lengyel, J. Negrete Jr., F. Jülicher, and L. G. Morelli, Temporal precision of short oscillatory time series, *In prep*, Stochastic Processes, New and Robust Estimator, Time Series Analysis, Theory.

I. M. Lengyel, J. Negrete Jr., F. Jülicher, and L. G. Morelli, Defining temporal precision in the presence of fluctuations with multiple timescales, *In prerp*, Stochastic Processes Time Series Analysis Statistics, Multiple Timescales, Ornstein Uhlenbeck.

J. Negrete Jr., I. M. Lengyel, L. Rohde, R. Desai, A. C. Oates, and Frank Jülicher, Stochastic genetic oscillations driven by noisy transcription factors, *In prep.*, Stochastic Processes, Time Series Analysis, Period Statistics, Mackey Glass.

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2017 Lengyel, I. M., & Morelli, L. G., Multiple binding sites for transcriptional repressors can produce regular bursting and enhance noise suppression, *Physical Review E, 95(4), 042412*, Stochastic Processes, Master Equation, Gene Regulation, Noise and Fluctuations.

2016 Webb, A. B., Lengyel, et al. , Persistence, period and precision of autonomous cellular oscillators from the zebrafish segmentation clock, *eLife, 5, e08438*, Nonlinear Dynamics, Ornstein Uhlenbeck, Stuart Landau, Segmentation Clock, Vertebrate Development, Biological Physics.

2014 Lengyel, I. M., et al., Nonlinearity arising from noncooperative transcription factor binding enhances negative feedback and promotes genetic oscillations , *Papers in Physics 6, 060012*, Nonlinear Dynamics, Gene regulation.

## Talks and Presentations

2018 Sep 17-19 Frontiers in Bioscience 3 , Temporal precision of short oscillatory time series (poster), *Buenos Aires*.

2016 Nov 23-25 Physics of Biology II, Multiple Binding sites for transciptional repressors can produce regular bursting and enhance noise suppression, *Geneva, Switzerland*.

2016 May 4-6 XIV TREFEMAC Regional Congress of Statistical Physics and Soft Matter, Multiple Binding sites for transciptional repressors can produce regular bursting and enhance noise suppression, *Balseiro Institue, Argentina*.

2015 Dec 1–4 Latin American Conference on Mathematical Modelling of Biological Systems , Oscillations and noise suppression in a negative feedback with multiple binding sites, *Buenos Aires*, Award: Best poster.

2015 Jul 16–20 Annual Meeting of the International Physics of Living Systems, Autonomous cellular oscillators from the zebrafish segmentation clock, *Westin Arlington-Gateway in Arlington, VA, USA*, .

2014 Oct 16–17 Celular and Developmental Biology Workshop, Characterization and design of reportes of the segmentation clock, *Buenos Aires, Argentina*, Award: best talk.

## Refereeing

2018 Physical Review E Journal

## Teaching

2013 Teaching Assistant, Physics Departamentl, FCEyN, Universidad de Buenos Aires, Argentina

## Supervisions

2016 - 2017 Mentor of Ezequiel Galrpen M.S. Thesis, Multiple Binding sites for transciptional repressors can produce regular bursting and enhance noise suppression, *IBioBA / CONICET DF / UBA, Argentina*, Supervisor: Dr. Luis G. Morelli, Qualification: Outstanding.

## Skills and Aptitudes

Statistical Physics | Time Series Analysis | Stochastic Processes | Nonlinear Dynamics | Applied Mathematics | Mathematical Modelling | Numerical Simulations | Biological Physics | Gene regulation

Data Science | Statistics | Machine Learning | Deep Learning | Bayesian Inference

Analytical reasoning | Public Speaking | Scientific Writing | Research | Teamwork | Advising

## Computer Languages and Technologies

Python | Matlab | C++ | Linux | LaTeX| Mathematica | keras | tensorflow | scikit-learn | pandas | sqlite

## Languages

English | Spanish