

# Stefan Franssen

Curriculum Vitae, September 2021

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PhD candidate at the TU Delft working under supervision of Aad van der Vaart and Botond Szabó on a diverse collection of problems with Nonparametric and Semiparametric Bayesian inference. **Areas of expertise:** Bayesian nonparametrics theory, Uncertainty quantification, Empirical Process theory.

## RESEARCH

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### Deep Learning,

- Frequentist coverage of Empirical Bayesian uncertainty quantification using Deep Neural Network regression, with Botond Szabo
- A simulation study of Uncertainty quantification in classification tasks using Empirical Bayesian Deep Neural Networks, Master Thesis supervision of Maxime Casera

### Discrete random structures,

- The Bernstein-von Mises theorem for the Pitman-Yor processes of nonnegative type, with Aad van der Vaart.
- The posterior distribution, consistency and uncertainty quantification for general stick-breaking processes.

### Semiparametric inference,

- The Bernstein-von Mises theorem for semiparametric mixtures, with Aad van der Vaart and Jeanne Nguyen

## EXPERIENCE

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### PhD Candidate

Technical University Delft

June 2021 — Now

Delft

### PhD Candidate

Leiden University

October 2018 — May 2021

Leiden

## AWARDS & HONORS

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- 2021** Best Student/Postdoc Contributed Paper Award (ISBA 2021 world meeting) ( **\$1000** )  
For the paper: The Bernstein-von Mises theorem for the Pitman-Yor process of nonnegative type

## SERVICES

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### Discussant

O'Bayes22

June 2022

### Organiser Reading group Mathematical statistics

Books covered:

- Weak Convergence and Empirical Processes - Van der Vaart and Wellner
- Lecture notes semiparametric inference - Van der Vaart
- Asymptotic Statistics - Van der Vaart

September 2019 — Now

Leiden, Online

### MFO video moderator

Oberwolfach - Foundations of Bayesian Inference for Complex Statistical Models

May 2021

Oberwolfach

### Reviewer

Electronic Journal of Statistics

## TALKS

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### The Bernstein-von Mises theorem for Pitman-yor processes of nonnegative type

- Contributed Talk ISBA 2021 Kunming July 2021
- Contributed Talk BAYSM:O Kunming November 2020
- Contributed Talk Bernoulli-IMS 2020 August 2020
- Talk Bayes Club Leiden May 2019
- Poster BNP12 Oxford June 2019

### Frequentist coverage guarantees of Empirical Bayesian uncertainty quantification using Deep Neural Network Regression

- Contributed Talk Cirm 2021 Marseille October 2021
- Contributed Talk EcoSta 2021 Hong Kong June 2021
- Contributed Talk Bernoulli-IMS 2020 August 2020
- Talk mathematical and statistical challenges in Uncertainty Quantification Cambridge May 2020

## Introduction to Bayesian nonparametric theory

- Talk LIACS

Leiden May 2021

## SEMINARS

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<b>Reading group Mathematical statistics</b> Several presentations	<b>September 2019 — Now</b>
<b>Reading group Causal inference</b> Peters et. al ch. 9	<b>November 2019 — Now</b> 8 April 2019
<b>Statistics for Astronomy</b> Several presentations	<b>Februari 2020 — May 2021</b>
<b>Oxbridge Reading group Bayesian nonparametrics</b> Several presentations	<b>October 2020 — April 2021</b>

## TEACHING

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<b>Cluster calculus</b> TA/Lecturer	<b>Fall 2021</b> TU Delft
<b>Calculus for Nanobiology</b> TA/Lecturer	<b>Fall 2021</b> TU Delft
<b>Supervision master's thesis Maxime Casara</b> A simulation study of Uncertainty quantification in classification tasks using Empirical Bayesian Deep Neural Networks	<b>Spring 2021</b>
<b>Introduction Mathematical statistics</b> Chat moderator, forum moderator	<b>Fall 2020</b> Leiden University
<b>Modelling and simulations</b> Writing lecture notes, exercises and exam material	<b>Fall 2019</b> Leiden University
<b>Quantative Research Methods</b> Teaching Assistant	<b>Fall 2019</b> Leiden University College
<b>Statistics</b> Lecturer	<b>Spring 2019</b> Leiden University College

## EDUCATION

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<b>Master of Science, Mathematical Sciences, Utrecht University</b> Master thesis: Topics in Bayesian Nonparametrics	<b>September 2015 — August 2018</b> open access
<b>Bachelor of Science, Wiskunde, Utrecht University</b>	<b>August 2012 — August 2015</b>

## TECHNICAL SKILLS

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**Programming/Scripting** Python, R, pymc3, Numpy, Tensorflow

## PUBLICATIONS

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In mathematical statistics, authors are listed in alphabetical order.

1. Franssen, S. E. M. P. & van der Vaart, A. W. The Bernstein-von Mises theorem for the Pitman-Yor process of nonnegative type. <https://arxiv.org/abs/2102.06059>.
2. Franssen, S. E. M. P., Nguyen, J. & van der Vaart, A. W. Bernstein-von Mises for semiparametric mixtures. Manuscript in preparation.
3. Franssen, S. E. M. P. & Szabo, B. Frequentist coverage guarantees of Empirical Bayesian uncertainty quantification using Deep Neural Network Regression. Manuscript in preparation.
4. Franssen, S. E. M. P. The posterior distribution, consistency and uncertainty quantification for general stick-breaking processes. Manuscript in preparation.
5. Franssen, S. E. M. P. *Topic in Bayesian Nonparametrics* Accepted: 2018-08-24T17:00:46Z. <https://dspace.library.uu.nl/handle/1874/367815> (2021).