

# Subhasish BASAK (He/Him)

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## Personal Information

Nationality Indian  
Date of birth December 21st, 1996  
Residence Lyon, France  
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## Education

2021 – 2024 **Université Paris-Saclay** *Gif-sur-yvette, France*  
PhD, Mathématique et Informatique  
2018 – 2020 **Chennai Mathematical Institute** *Chennai, India*  
Masters degree, Data Science, CGPA **9.29**  
2015 – 2018 **St. Xavier's College (Autonomous)** *Calcutta, India*  
Bachelors degree, Statistics, CGPA **8.67**

## Professional Competencies

Research domain **Bayesian statistics & optimization** (BayesOpt) for expensive black-box functions, **Quantitative Microbiological Risk Assessment** (QMRA) in food safety, **Antimicrobial Resistance** (AMR) transmission under ONE Health framework...

Publications [Google scholar](#), [HAL](#)

Programming **Python, R**

Languages **Française, English, Hindi, Bengali**

Other competencies **Git, L<sup>A</sup>T<sub>E</sub>X, Bash, FSKX, HTML**

## Employment

January 2024 - present  
18 months **Agence Nationale de Sécurité Sanitaire (ANSES)**, *Lyon, France*  
*Post-Doc: JPIAMR project [ENVIRE](#)*  
**Supervisor:** Dr. Lucie COLLINEAU  
→ **Project:** One Health interventions to reduce development and transmission of AMR.  
This collaborative work with [FU-Berlin](#) aims the following contributions:  
→ Developing a **QMRA** model for ESBL *E. coli* (AMR) spread from **broiler** production  
→ Collection and analysis of data on **AMR spread** and **farm interventions**  
→ Modeling human exposure via **foodborne**, **occupational** and **environmental** pathways

January 2021 - 2024  
36 months **Agence Nationale de Sécurité Sanitaire (ANSES)**, *Maison-Alfort, France*  
*Doctorant: EU-PRIMA project [ArtiSaneFood](#)*  
**Supervisor:** Dr. Laurent GUILLIER  
→ **Project:** Microbial food safety for artisanal foods in the Mediterranean region.  
This collaborative work with [CNIEL](#) and [ACTALIA](#) has a three-fold contribution:  
→ Building a 3-pathogen **QMRA** model: *E. coli*, *Salmo.* & *Listeria* in raw milk cheese  
→ Collection and **processing of data** from WP partners and **integration** in the model  
→ Proposing a **Bayesian multi-objective optimization** algorithm for the QMRA model

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## Research Experiences

- June & November 2024 **Freie Universität Berlin (FU-Berlin)**, Berlin, Germany  
Short study visit: [Department of Veterinary Medicine](#)  
**Collaborator** : Prof. Roswitha MERLE & Nunzio SARNINO  
- **Project ENVIRE** : Interventions to control the dynamics of antimicrobial resistance from chickens through the environment [\[project\]](#)
- Oct. 2019 – Dec. 2023 **Laboratoire des signaux et systemés (L2S)**, Gif-sur-yvette, France  
Doctorant: [Université Paris-Saclay](#)  
**Supervisor** : Prof. Julien BECT & Prof. Emmanuel VAZQUEZ  
- **Thesis** : Multipathogen quantitative risk assessment in raw milk soft cheese, monotone integration and Bayesian optimization [\[PhD thesis\]](#)
- May – July 2019 **Laboratoire des signaux et systemés (L2S)**, Gif-sur-yvette, France  
Summer intern: [CentraleSupélec](#)  
**Supervisor** : Prof. Emmanuel VAZQUEZ  
- **Internship** : Reviewing Python toolboxes for Gaussian Process Regression [\[report\]](#)

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## Publications

1. **Numerical issues in maximum likelihood parameter estimation for Gaussian process interpolation** with Sébastien Petit, Julien Bect and Emmanuel Vazquez  
- In the proceedings of LOD 2021: International Conference on Machine Learning, Optimization, and Data Science [\[open access\]](#)
2. **Integration of bounded monotone functions: Revisiting the nonsequential case, with a focus on unbiased Monte Carlo (randomized) methods** with Julien Bect and Emmanuel Vazquez  
- In the proceedings of 53èmes Journées de Statistique de la Société Française de Statistique (SFDS) [\[open access\]](#)
3. **Quantitative risk assessment of Haemolytic and Uremic Syndrome (HUS) from consumption of raw milk soft cheese** with Janushan Christy, Laurent Guillier, Frédérique Audiat-Perrin, Moez Sanaa, Fanny Tenenhaus-Aziza, Julien Bect and Emmanuel Vazquez  
- Food and Ecological Systems Modelling Journal (FESMJ) [\[open access\]](#)
4. **Multipathogen quantitative risk assessment in raw milk soft cheese** with Laurent Guillier, Julien Bect, Janushan Christy, Fanny Tenenhaus-Aziza, and Emmanuel Vazquez  
- Microbial Risk Analysis (MRA) Journal (special issue of ICPMF-12) [\[open access\]](#)
5. **Multipathogen quantitative risk assessment in raw milk soft cheese, monotone integration and Bayesian optimization**  
- PhD thesis defended at STIC doctoral school, Université Paris-Saclay [\[open access\]](#)

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## Presentations & scientific communications

- 12-14 November 2024 **EcoToxicoMic '24 @ Gothenburg University - Gothenburg, Sweden**  
- **Title** : QMRA model to assess the human exposure to ESBL *E. coli* from poultry production through different environmental pathways. [\[poster pdf\]](#)
- 6 November 2024 **ENVIRE webinar @ FU Berlin - Berlin, Germany**  
- **Title** : A quantitative approach of modeling the Foodborne & Occupational exposure of ESBL *E. coli* from broiler production. [\[slides ppt\]](#)
- 28-29 October 2024 **ENVIRE meeting @ ANSES - Maisons-Alfort, France**  
- **Title** : WP3 - Foodborne and Occupational module. [\[slides ppt\]](#)

- 27-29 August 2024 [ModAH '24 @ INRAE - Nantes, France](#)
- **Title** : Quantification of human exposure to antimicrobial resistant *E. coli* using a farm to fork model in broiler chicken production. [[poster pdf](#)]
- 16 June 2024 [ModStatSAP '24 @ Institut des Systèmes Complexes - Paris, France](#)
- **Title** : Quantitative assessment of ESBL-producing *E. coli* contamination, transmission dynamics, and evolution in broiler farms in the presence of on-farm intervention measures. [[slides pdf](#)]
- 20 March 2024 [PhD Thesis Defense @ CentraleSupélec - Paris-Saclay, France](#)
- **Title** : Multipathogen quantitative risk assessment in raw milk soft cheese, monotone integration and Bayesian optimization [[slides pdf](#)]
- 2 October 2023 [COPIL ArtiSaneFood '23 @ Maison du lait - Paris, France](#)
- **Title** : Appréciation quantitative des risques multipathogènes dans le fromage à pâte molle au lait cru et optimisation Bayésienne [[slides pdf FR](#)]
- 13-16 June 2023 [ICPMF 12 @ University of Hokkaido - Sapporo, Japan](#)
- **Title** : Minimizing the risk of foodborne illness and analytical costs using a QMRA model for raw milk cheeses [[slides pdf](#)]
- 24-25 May 2023 [ArtisaneFood seminar @ Instituto Politécnico de Bragança, Portugal](#)
- **Title** : Minimizing multi-pathogen risk and costs through control measures: an application case for raw milk cheese [[slides pdf](#)]
- 3-6 April 2023 [GdR Mascot NUM @ Le Domaine Port aux Rocs - Le Croisic, France](#)
- **Title** : Bayesian multi-objective optimization for stochastic simulators [[slides pdf](#)]
- 18-19 October 2022 [JSDA 2022 @ ANSES - Maison-Alfort, France](#)
- **Poster** : Bayesian multi-objective optimization for quantitative risk assessment in microbiology [[poster pdf](#)]
- 16 September 2022 [COPIL ArtiSaneFood '22 @ L'Association des ODG Laitiers - Caen, France](#)
- **Title** : Optimisation Bayésienne pour l'appréciation quantitative des risques en microbiologie [[slides pdf](#)]
- 15 September 2022 [Journée de doctorats @ L2S, CentarleSupélec - Gif-sur-yvette, France](#)
- **Title** : Bayesian multi-objective optimization for quantitative risk assessment in microbiology [[slides pdf](#)]
- 12-15 September 2022 [IDF World Dairy Summit @ New Delhi, India \(online\)](#)
- **Poster** : Quantitative risk assessment and optimization of process intervention parameters for French raw milk soft cheese [[poster pdf](#)]
- 29 Aug. – 2 Sept. 2022 [IDESSAI @ Max-Planck Institute - Saarbrücken, Germany](#)
- **Poster** : Bayesian multi-objective optimization for quantitative risk assessment in microbiology [[poster pdf](#)]
- 7-9 July 2022 [ArtisaneFood annual meeting @ Università di Bologna - Bologna, Italy](#)
- **Title** : ArtiSaneFood WP 7: Study impact of intervention strategies [[slides pdf](#)]
- 13-17 June 2022 [53èmes Journées de Statistique @ Université Claude Bernard - Lyon, France](#)
- **Title** : Integration of bounded monotone functions: Revisiting the nonsequential case, with a focus on unbiased Monte Carlo (randomized) methods [[slides pdf](#)]
- 7-9 June 2022 [GdR Mascot NUM @ Sigma Clermont - Clermont-Ferrand, France](#)
- **Poster** : Bayesian multi-objective optimization for quantitative risk assessment in microbiology [[poster pdf](#)]
- 4-8 October 2021 [LOD – 7th International Conference - Grasmere, UK \(online\)](#)
- **Title** : Numerical issues in maximum likelihood parameter estimation for Gaussian process interpolation [[slides pdf](#)]

- 29 September 2021 [Journée de doctorats @ L2S, CentarleSupélec - Gif-sur-yvette, France](#)  
 - **Poster** : [Variance reduction with stratified sampling for bounded monotone function \[poster pdf\]](#)
- 10 March 2021 [DCE reading group @ The Alan Turing Institute - London, UK](#) (online)  
 - **Title** : [Numerical issues in maximum likelihood parameter estimation for Gaussian process interpolation \[slides pdf\]](#)
- 26 July 2019 [Internship defense @ L2S, CentarleSupélec - Gif-sur-yvette, France](#)  
 - **Title** : [A review of python packages for Gaussian process regression \[slides pdf\]](#)

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## Workshops & formations

- 24 – 28 June 2024 **Parma University – Parma, Italy**  
 - *Summer School* : [Sensitivity Analysis of Model Output \(SAMO\)](#)
- 9 – 10 November 2023 **EFSA, BfR – Berlin, Germany**  
 - *Workshop* : [Using Epidemiological Studies in Health Risk Assessments](#)
- 29 Aug. – 2 Sept. 2022 **INRIA-DFKI, Max-Plank Institute – Saarbrücken, Germany**  
 - *Summer school* : [Trusted and sustainable Artificial Intelligence \(AI\)](#)
- 20 June 2022 **ONE – Conference 2022, The Square - Bruxelles, Belgium**  
 - *Workshop* : [Harmonized Food Safety Knowledge Exchange \(FSKX\)](#)
- 14 – 18 June 2021 **Université Pierre et Marie Curie, Sorbonne – Paris, France**  
 - *Summer school* : [Numerical analysis: Multi-fidelity, multi-level, model selection](#)
- 16 – 20 December 2019 **Indo-French Centre for Applied Mathematics, IISER – Pune, India**  
 - *Winter school* : [Graphs and Random Process](#)
- 3 – 14 December 2018 **Indo-French Centre for Applied Mathematics IISER – Kolkata, India**  
 - *Winter school* : [Uncertainty quantification and sensitivity analysis](#)

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## Relevant Coursework

[University courses I followed in my Bachelor's and Master's degree studies:](#)

**Mathematics & Statistics** Numerical Linear algebra, Single and multivariate calculus, Combinatorics, Probability Theory, Sampling theory, Parametric & Non-parametric Statistical Inference, Multi-variate Analysis, Linear Statistical Models, Statistical Quality Control, Econometrics, Time Series Analysis, Population Statistics.

**Machine Learning & Data Science** Deep & Reinforcement learning, Distributed Computing for Big Data, Design & Analysis of Algorithms, Natural Language Processing (NLP), Computer Vision.

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## References

### Laurent GUILLIER

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