

# Subhasish BASAK (He/Him)

## Personal Information

Nationality	Indian
Date of birth	December 21st, 1996
Residence	Lyon, France
Email address	subhasish.basak@anses.fr
Webpage	<a href="https://subhasishbasak.github.io">https://subhasishbasak.github.io</a>

## Education

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

## Professional Competencies

Research domain	<b>Bayesian statistics &amp; optimization</b> (BayesOpt) for expensive black-box functions, <b>Quantitative Microbiological Risk Assessment</b> (QMRA) in food safety, <b>Antimicrobial Resistance</b> (AMR) transmission under ONE Health framework...
Publications	<a href="#">Google scholar</a> , <a href="#">HAL</a>
Programming	<b>Python, R</b>
Languages	<b>Française, English, Hindi, Bengali</b>
Other competencies	<b>Git, L<sup>A</sup>T<sub>E</sub>X, Bash, FSKX, HTML</b>

## Employment

January 2024 - present 18 months	<b>Agence Nationale de Sécurité Sanitaire (ANSES)</b> , <i>Lyon, France</i> <i>Post-Doc:</i> JPIAMR project <a href="#">ENVIRE</a> <b>Supervisor:</b> Dr. Lucie COLLINEAU
	→ <b>Project:</b> One Health interventions to reduce development and transmission of AMR. This collaborative work with <a href="#">FU-Berlin</a> aims the following contributions: → Developing a <a href="#">QMRA</a> model for ESBL <i>E. coli</i> (AMR) spread from <a href="#">broiler</a> production → Collection and analysis of data on <a href="#">AMR spread</a> and <a href="#">farm interventions</a> → Modeling human exposure via <a href="#">foodborne</a> , <a href="#">occupational</a> and <a href="#">environmental</a> pathways
January 2021 - 2024 36 months	<b>Agence Nationale de Sécurité Sanitaire (ANSES)</b> , <i>Maison-Alfort, France</i> <i>Doctorant:</i> EU-PRIMA project <a href="#">ArtiSaneFood</a> <b>Supervisor:</b> Dr. Laurent GUILLIER
	→ <b>Project:</b> Microbial food safety for artisanal foods in the Mediterranean region. This collaborative work with <a href="#">CNIEL</a> and <a href="#">ACTALIA</a> has a three-fold contribution: → Building a 3-pathogen <a href="#">QMRA</a> model: <i>E. coli</i> , <i>Salmo.</i> & <i>Listeria</i> in raw milk cheese → Collection and <a href="#">processing of data</a> from WP partners and <a href="#">integration</a> in the model → Proposing a <a href="#">Bayesian multi-objective optimization</a> algorithm for the QMRA model

## 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]

## 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]

## 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, CentraleSupélec - 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-Plank Institute - Saarbrucken, 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, CentraleSupélec - 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, CentraleSupélec - Gif-sur-Yvette, France](#)
- **Title :** A review of python packages for Gaussian process regression [[slides pdf](#)]

## 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

## Relevant Coursework

University courses I followed in my Bachelor's and Master's degree studies:

- |  |  |
|--|--|
| <b>Mathematics &amp; Statistics</b>        | Numerical Linear algebra, Single and multivariate calculus, Combinatorics, Probability Theory, Sampling theory, Parametric & Non-parametric Statistical Inference, Multivariate Analysis, Linear Statistical Models, Statistical Quality Control, Econometrics, Time Series Analysis, Population Statistics. |
| <b>Machine Learning &amp; Data Science</b> | Deep & Reinforcement learning, Distributed Computing for Big Data, Design & Analysis of Algorithms, Natural Language Processing (NLP), Computer Vision.  |

## References

### Laurent GUILLIER

Chargé d'activité de recherche  
ANSES Maison-Alfort  
[laurent.guillier@anses.fr](mailto:laurent.guillier@anses.fr)

### Prof. Julien BECT

Maitre de conférence  
CentraleSupélec, Univ. Paris-Saclay  
[julien.bect@centralesupelec.fr](mailto:julien.bect@centralesupelec.fr)

### Fanny TENENHAUS-AZIZA

Cheffe de projet DATA  
CNIEL  
[ftenenhaus@cniel.com](mailto:ftenenhaus@cniel.com)

### Lucie COLLINEAU

Chargée d'activité de recherche  
ANSES Lyon  
[lucie.collineau@anses.fr](mailto:lucie.collineau@anses.fr)

### Prof. Emmanuel VAZQUEZ

Maitre de conférence  
CentraleSupélec, Univ. Paris-Saclay  
[emmanuel.vazquez@centralesupelec.fr](mailto:emmanuel.vazquez@centralesupelec.fr)

### Jean-Philippe AMAT

Chef d'unité EAS  
ANSES Lyon  
[jean-philippe.amat@anses.fr](mailto:jean-philippe.amat@anses.fr)