

# Sima Rastayesh

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## SUMMARY

My strong theoretical skills in risk and reliability engineering calculations coupled with powerful analytical mind have now blended with 5 years of practical experience with multidisciplinary projects in extensive fields with wind turbines, bridges as well as electrical and mechanical components; made me a high-qualified engineer in different aspects of risk and reliability engineering such as sensitivity and uncertainty analysis, Reliability, Availability, Maintainability and Safety (RAMS), risk-based decision making and qualitative and quantitative risk assessment.

## EXPERIENCES

▽ **Ph.D. Fellow** AAU, Aalborg, Denmark (2017-2019)

### ✓ Responsibilities:

- Hazard identification
- Regression Analysis
- Risk assessment of wind turbines close to highways
- Risk-based inspection planning (RBI) of wind turbines and bridges
- Operation and maintenance (O&M) planning of wind turbines and bridges
- Decision making on inspections, operation, maintenance, and repairs accounting for both uncertainties and consequences using information from inspections, sensors, and condition monitoring
- System-level risk and reliability assessment of power electronic devices (Proton Exchange Membrane (PEM) Fuel Cell system)

### ❖ Achievements:

- Development of FMEA of PEM Fuel cell system and obtaining Risk Priority Numbers (RPNs) for risk analysis
- Risk analysis of ice and blade thrown away from wind turbines near highways
- Application of the ALARP principle
- Development of a dynamic Bayesian Network (dBN) for risk-based inspection planning and (O&M) planning of wind turbines and bridges
- Uncertainty and sensitivity analysis
- Development of a stochastic material model for reinforcement bars in concrete
- Case study on fatigue safety of a composite viaduct bridge in Switzerland based on long term monitoring data
- Use of information from structural health monitoring for Bayesian updating in dBN
- Structural health monitoring using decision trees
- Cost-benefit analysis for lifecycle management
- Consequence modeling

▽ **Visiting Research Fellow** COWI, Kongens Lyngby, Denmark (2019)

### ❖ Achievements:

- Development of a model for risk-based operation and maintenance planning by Bayesian Network during three months of my secondment as part of my Ph.D. program.
- Cost-benefit analysis.

▽ **Visiting Research Fellow**      **PHIMECA Engineering**, Cournon d'auvergne, France      **(2018)**

❖ **Achievements:**

- Development of my skills with programming with Python to use for Risk Analysis using Bayesian Networks during one month of my secondment as part of my Ph.D. program.

▽ **Visiting Research Fellow**      **IFSTTAR**, Champs sur Marne, France      **(2017-2018)**

❖ **Achievements:**

- Being familiar with the fracture mechanics approach to use for damage model over time for risk analysis of bridges during two months of my secondment as part of my Ph.D. program.

▽ **RAMS Specialist**      **Petro-Tirazis Energy Development (PTED)**, Tehran, Iran **(2014-2016)**

✓ **Responsibilities:**

- Risk and Reliability Assessment
- PRA (Probabilistic Risk Assessment)
- System Analysis with Reliability Block Diagrams (RBDs), Fault Trees Analysis (FTA) and Event Tree Analysis (ETA)
- Failure Modes and Effects Analysis (FMEA)
- Safety Management
- Probability analysis
- Monte Carlo simulation
- Reliability Centered Maintenance (RCM)

❖ **Achievements:**

- Responsible for writing the proposals to get funding from companies in the energy sector such as oil and gas (My focus was in the RAMS section)
- PRA of diesel generators (DGs) of a power plant using RBDs, FTA and consequence modeling of their failures using ETA
- Design improvement of Diesel generators

## EDUCATIONS

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➤ **Ph.D. Fellow** at Department of Civil Engineering      **(2017 - 2019)**  
Aalborg University (AAU), Aalborg, Denmark

Projects:

- ❖ **Risk Assessment of Wind Turbine Support Structures and Bridges**  
(This project INFRASTAR has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement.)  
<http://infrastar.eu/research-framework/wp3-reliability-approaches-for-decision-making/esr11-aa/>  
Supervisor: Professor John Dalsgaard Sørensen
- ❖ **System-level risk and reliability assessment of PEM Fuel Cell system**  
(A cooperation with the department of energy technology)  
Supervisors: Professor Frede Blaabjerg, Professor Huai Wang  
Co-supervisor: Assistant professor Dao Zhou

➤ **M.Sc. Degree** in Energy Engineering      **(2011 - 2013)**  
Science and Research Branch, Islamic Azad University (SRBIAU), Tehran, Iran

Projects:

❖ Dynamic Reliability Assessment for Bushehr Nuclear Power Plant Emergency Diesel Generators  
Supervisors: Professor Mohammad Pourgol-Mohammad and Professor Kamran Sepanloo

❖ Development of Algorithm for Estimation of the Failure of Tehran Research Reactor Cooling System  
Supervisor: Professor Kamran Sepanloo

❖ **Achievements:**

- Building FT and ET for BNPP diesel generators as well as Tehran Research Reactor Cooling System to calculate reliability using failure data
- Human error assessment and reduction technique for Tehran Research Reactor Cooling System

➤ **B.Sc. Degree** in Energy Engineering (2007 - 2011)  
Science and Research Branch, Islamic Azad University (SRBIAU), Tehran, Iran

## COMPUTER SKILLS

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- Hugin (Bayesian Network Software)
- Knowledge of programming by MATLAB, Python, and R.
- ReliaSoft Package, e.g. BlockSim and XFMEA
- Microsoft Office: (Word, PowerPoint, Excel, Outlook)

## LANGUAGES

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- Persian (Native)
- English (Fluent)
- Danish (Intermediate, Modul 3.3)
- Arabic (Intermediate)

## AFFILIATIONS

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**Board member** of the Society for Risk Analysis (SRA) Nordic chapter as a student representative.

## PERSONAL AND SOCIAL SUMMARY

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I was born in Iran in 1988; I have been in Denmark more than three years. As a person, I am a good team player with excellent communication and management skills. Dance is my favorite activity. I like spending my spare time do sports such as badminton, Zumba, swimming and basketball as well as social activities. Worked and lived in different European and Asian cultures.

## PUBLICATIONS

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Available upon request.

You can also refer to the following links to access my publications.

- During Ph.D.: <https://vbn.aau.dk/en/persons/139660>
- All: <https://www.linkedin.com/in/sima-rastayesh/>

## REFERENCES

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Available upon request.