

# Unathi Koketso Skosana

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## EDUCATION

2022 — present	<b>PhD</b> Quantum computing, Stellenbosch University (SU)
2020 — 2022	<b>MSc</b> Quantum computing (cum laude) [ <a href="#">see here</a> ], Stellenbosch University (SU)
2019 — 2020	<b>Hons</b> Theoretical Physics (cum laude), Stellenbosch University (SU)
2016 — 2018	<b>Bsc</b> Theoretical Physics (cum laude), Stellenbosch University (SU)

## WORK EXPERIENCE

2022 — 2023	Research intern, IBM Research Africa
2018 — 2021	Teaching assistant (undergraduate physics 114/144), Stellenbosch University

## GRANTS AND RECOGNITION

2023 — present	DSTI Interprogramme Bursary Scheme), Council of Scientific and Industrial Research (CSIR)
2020 — 2022	Masters Research Grant, Council of Scientific and Industrial Research (CSIR)
2020 — 2021	Undergraduate (department of physics) top achievers, Stellenbosch University (SU)
2017 — 2019	Undergraduate/Honours Programme, Square Kilometer Array (SKA)
2016 — 2017	Merit Award Bursary, Stellenbosch University (SU)

## ACADEMIC PAPERS

2025	Unathi Skosana, Sthembiso Gumede and Mark Tame “Spin-state energetics of heme-related models with the variational quantum eigensolver”. arXiv: <a href="https://arxiv.org/abs/2504.08494">2504.08494</a> [ <a href="#">quant-ph</a> ]
2024	Unathi Skosana and Mark Tame “Hyperparameter tuning of variational quantum algorithms”. In: The Proceedings of SAIP2024, the 68th Annual Conference of the South African Institute of Physics (December 2024). pp. 677 - 683. ISBN: 978-1-0370-2645-4. Online: <a href="#">The proceedings of SAIP2024</a>
2021	Unathi Skosana and Mark Tame “Demonstration of Shor’s factoring algorithm for $N = 21$ on IBM quantum processors”. In: Sci Rep (Aug 2021). DOI: <a href="https://doi.org/10.1038/s41598-021-95973-w">10.1038/s41598-021-95973-w</a> . arXiv: <a href="https://arxiv.org/abs/2013.13855">2013.13855</a> [ <a href="#">quant-ph</a> ]
2021	Unathi Skosana and Mark Tame “On the advantages of relative Toffoli gates”. In: Corrigenda to The Proceedings of SAIP2021, the 65th Annual Conference of the South African Institute of Physics (Apr 2022). pp. 14 - 21. ISBN: 978-0-620-97693-0. Online: <a href="#">The proceedings of SAIP2021</a>

## PUBLIC SPEAKING

- 2025 “Agentic financial security platform with real-time fraud detection and security monitoring” (1st place prize), Hackathon hosted by BET Software & Otinga [\[see here\]](#). 17 August
- 2024 “Hyperparameter tuning of variational quantum algorithms” (1st place prize) South African Institute of Physics (SAIP) [\[see here\]](#). 02 August
- 2023 “Augustus: An AI-powered chatbot fine-tuned for building UX/UI in NextJS 13” (1st place prize), Fintech hackathon hosted by Innovus, Stellenbosch University [\[see here\]](#). 08 October
- 2022 “Introduction to Quantum Computing Workshop” South African Institute of Industrial Engineers (SAIIE). 05 October
- 2022 “Introduction to Quantum Computing” South African Institute Electrical Engineers (SAIEE). 30 August
- 2021 “On the advantages of relative phase Toffolis” South African Institute of Physics (SAIP) [\[see here\]](#). 28 July
- 2019 “Modeling of Measurement-based Quantum Computing on IBM Q Experience Devices” (1st place prize) WitsQ Summer School [\[see here\]](#). 10 Dec

## PROJECTS

- 2025 Agentic financial security platform with real-time fraud detection and security monitoring [\[see here\]](#)
- 2023 Augustus: An AI-powered chatbot fine-tuned for building UX/UI in NextJS 13 [\[see here\]](#)
- 2022 Server and client (Flask + React Native) for controlling hyperentangled photonic light source [\[see here\]](#)

## MISCELLANEOUS

- 2022 [Qiskit Advocate](#), Qiskit
- 2022 [IBM Certified Associate Developer](#), Quantum Computation using Qiskit v0.2X
- 2022 [IBM Quantum Spring Challenge 2022](#), Qiskit
- 2022 [Qiskit Advocate Mentorship Program Fall 2022](#), Qiskit
- 2020 [Qiskit Global Summer School 2020](#), Qiskit