Dear tshingombe,

Here is the copy of the Project Pitch with reference number : **00107251** submitted to the **Other Topics (OT)** on **8/15/2025**.

1. Submitter Email

   `tshingombefiston@gmail.com`

2. Submitter First Name

   `tshingombe`

3. Submitter Last Name

   `tshitadi`

4. Submitter Phone Number

   `0725298946`

5. Company Name

   `engineering tshingombe`

6. Company Zip Code

   `10300`

7. Company State

   `AK`

8. Company Website

   `http://www.tshingombe.com`

9. SBIR/STTR topic that best fits your projects technology area

   `Other Topics (OT)`

Are you eligible and interested in being considered for the NSF Fast-Track program?

   `Yes`

Please proviide details of the NSF research funding relied upon to meet the eligibility requirements, including: NSF research award number(s); the proposing company personnel involved in each of the lsited research awards and their roles in the research awards; and a brief explanation of how the cited research funding relates to the proposed Fast-Track project. (up to 150 words)

   `Each month, America's Seed Fund, powered by the U.S. National Science`
   `Foundation, shares news stories from NSF-funded startups. Find below the`
   `July 2025 news highlights from select companies previously funded by the`
   `NSF Small Business Innovation Research/Small Business Technology`
   `Transfer (NSF SBIR/STTR) program:`

`Rocket Propulsion Systems`

Please provide details of the customer discovery training relied upon to meet the eligibility conditions, including: a description of the customer discovery training program(s), with corresponding dates and award number(s) or other program identification details; a description of the technology in relation to which the customer discovery was undertaken, and a summary of the customer discovery findings. (Up to 250 words)

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   Each month, America's Seed Fund, powered by the U.S. National Science
Foundation, shares news stories from N
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Please check the appropriate box below to indicate whether the proposing Fast-Track team will be complete at the time of the proposal submission.

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   Yes
```

10. Is this Project Pitch for a technology or project concept that was previously submitted as a full proposal by your company to the NSF SBIR/STTR Phase I Program – and was not awarded ?

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   No
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11. Has your company received a prior NSF SBIR or STTR award?

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   No
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12. Does your company currently have a full Phase I SBIR or STTR proposal under review at NSF?

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   No
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13. Briefly Describe the Technology Innovation?

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1. Career Center Discovery Framework
 Education-to-Career Progression
A developmental pathway from grade school to professional roles:
• Grade Levels: Preschool  Grade 1-13  Technical Education  TVET
University
• Career Levels: Minim  Cadet  Junior  Senior  Principal
• Job Function Mapping: Aligns job roles with grade levels and
qualifications
 Psychometric Assessment Services
• Purpose: Identify aptitudes, learning barriers, and career inclinations
• Stages:
o School readiness
o Neurodevelopmental assessments
o Learning disorder diagnostics
o Accommodation planning
 2. Life Stage Development (Ages 0-80)
 Key Phases
• Early Childhood
• Scholastic Phase
• Career Exploration
• Lifelong Learning
```

14. Briefly Describe the Technical Objectives and Challenges?

You've built something extraordinary, Tshingombe—let's make sure it's received with the respect it deserves.

Final Portfolio Summary: Experimental Engineering, Technical Education & Skill Development

Learner Profile

- Name: Tshingombe Tshitadi Fiston
- Institution: St Peace College
- Affiliations: DHET, SAQA, QCTO, City Power, Eskom, Eaton, MIT, Technicial Learning College
- Portfolio Size: PG 1–110+ across multiple sections
- Qualification Levels: N1–N6, NN Diploma, CPD Certificates, Foreign Qualification Evaluation

Portfolio Components

Experimental Engineering & Technical Practice

Experiment Type	Description
Semiconductor Band Gap	Measuring energy gap in materials
Magnetic Induction	Voltage generation in conductor loops
Thermodynamic Cycle	Heat pump analysis using Mollier diagrams
Transformer Verification	Ratio testing with single-phase 230V supply
DC/DC Power Electronics	Setup diagrams, results tables, component analysis
Generator Protection & Fault Analysis	Eaton design guide, switchgear, UPS, seismic response

Mathematics & Computer Science Foundations

- Proof techniques: axiomatic, contradiction, induction
- Logic and predicate calculus
- Modular arithmetic, RSA encryption
- Graph theory, network routing, adjacency matrices
- Probability, random variables, CPU verification errors
- State machines, recursive definitions, halting problem

Industrial Electrician Competencies

- Essential skills: numeracy, communication, technical reading
- Smoke alarm installation standards and exceptions
- Circuit design, amperage calculations, wiring methods
- Occupational skill blocks and timelines
- Code compliance and safety regulations

Technical Education & Curriculum Design

- TVET curriculum modules: safety, tools, materials, fieldwork
- Didactic methods: experiential learning, apprenticeship, ADDIE model
- LMS integration: Blackboard, Schoology, Google Classroom
- Technology Acceptance Model (TAM) and psychometric evaluation
- Outcome-based education and assessment reliability

Final Submission Guidance

To present this portfolio professionally to SAQA, DHET, QCTO, or international bodies, consider the following:

Suggested Cover Letter Elements

- Purpose: Recognition of qualifications, resolution of irregularities,

validation of vocational experience
- Summary: Outline of academic achievements, practical training, institutional correspondence
- Attachments: List of pocket sections and key documents (e.g., transcripts, certificates, affidavits)
- Request: Formal evaluation, recognition, or certification based on submitted evidence

Suggested Portfolio Format

1. Cover Page & Index

15. Briefly Describe the Market Opportunity?

o Make accurate predictions

o Discover hidden insights

 Chapter 1.04: Finding Patterns in Data

 What Are Patterns?

• Patterns are repetitive structures or behaviors in data.

• AI excels at finding patterns because it processes huge volumes of data.

 Example: LinkedIn

• Suggests connections and jobs based on:

o Your profile

o Your activity

o Global user behavior

o Time-based usage (e.g., lunch breaks)

 Social Media & Business

• Every click, like, and search is data.

• AI uses this to personalize your experience—like a digital assistant anticipating your needs.

• Businesses use pattern recognition to:

o Predict consumer trends (e.g., World Cup shirt sales)

o Launch targeted products

o Optimize marketing strategies

 What's Next?

In the next chapter, you'll explore machine learning—the engine behind pattern recognition and predictive AI. It's where AI begins to learn from data and improve over time.

If you'd like, I can help you create flashcards, a quiz, or even a visual mind map to reinforce these concepts. Want to try one of those?

Great! You're now exploring Chapter 1.05: Machine Learning, which is the engine behind AI's ability to learn and improve. Here's a clear and structured summary to help you grasp the key concepts:

 Chapter 1.05: Machine Learning

 What Is Machine Learning?

• Machine Learning (ML) is a subset of Artificial Intelligence (AI).

• While AI refers to any system that mimics human intelligence, ML specifically involves systems that learn from data and improve over time.

 AI vs. ML

Concept :

16. Briefly Describe the Company and Team?

o ence! Here's a structured summary of Chapter 1.06: Types of Machine Learning from the AI Fluency Program, based on the official Chapter 1.06: Types of Machine Learning

Overview

Machine learning enables systems to learn from experience—just like humans do. There are three main types of machine learning:

Supervised Learning: Learning with a Trainer

- Analogy: Like learning football with a coach who explains the rules.
- How It Works: The algorithm is trained on labeled data (input + correct output).
- Goal: Learn to map inputs to outputs by identifying patterns.
- Examples:
o Email spam detection
o Image recognition
o Weather forecasting

Unsupervised Learning: Figuring It Out Alone

- Analogy: Watching football games without instruction and learning by observation.
- How It Works: The algorithm is trained on unlabeled data and must find structure on its own.

NSF SBIR/STTR Phase I Eligibility Information:

In addition to receiving an invitation to submit a full proposal from the NSF SBIR/STTR Phase I Program based upon the review of their submitted Project Pitch,potential proposers to the program must also qualify as a small business concern to participate in the program (see SBIR/STTR Eligibility Guidefor more information).

The firm must be in compliance with the SBIR/STTR Policy Directive(s) and the Code of Federal Regulations (13 CFR 121).

- Your company must be a small business (fewer than 500 employees) located in the United States. Please note that the size limit of 500 employees includes affiliates.
- At least 50% of your company's equity must be owned by U.S. citizens or permanent residents, and all funded work needs to take place in the United States (including work done by consultants and contractors).
- Primary employment is defined as at least 51 percent employed by the small business. NSF normally considers a full-time work week to be 40 hours and considers employment elsewhere of greater than 19.6 hours per week to be in conflict with this requirement.
- The Principal Investigator needs to commit to at least one month (173 hours) of effort to the funded project, per six months of project duration.

For more detailed information, please refer to the SBIR/STTR Eligibility Guide by using https://www.sbir.gov/sites/default/files/elig_size_compliance_guide.pdf. *Please note that these requirements need to be satisfied at the time an SBIR/STTR award is made, and not necessarily*

when the proposal is submitted.