THE NATIONAL UNIVERSITY OF LESOTHO

Department of Mathematics and Computer Science

CS3520 - Computer Organisation and Architecture I

Domain Analysis Report Template

21st September 2025

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1. **Application Context (max. 200 words)**
   - Briefly describe the chosen application domain for low-cost AI mobile phones.
   - What user problems or opportunities does this domain address (in the context of Lesotho/Africa)?
   - Why is this domain relevant?

2. **Representative Applications (Table format)**
   - List 3–5 representative applications that characterise the domain.
   - For each, describe the function and note what makes it computationally interesting.

Application	Short Description	Key Computational Tasks	Notes (Relevance)
Voice Authentication	Unlock phone with voice	Pattern matching, ML inference	High relevance to mobile banking

3. **Workload Characteristics (max. 200 words)**

- Summarise the main workload requirements observed across the representative applications (e.g., intensity of arithmetic, data movement, memory use, etc.).

- Keep this descriptive; avoid going into ISA or microarchitecture design here.

4. **Initial Insights for Processor Design (bullet points, max. 100 words)**

- From the above, what high-level requirements should the processor support?

- Example: needs efficient handling of frequent small matrix multiplications.

- These insights will guide the ISA and microarchitecture stages.

4. **References**

- List any papers, websites, or reports consulted.

It is the work of true education to train the youth to be thinkers, and not mere reflectors of other men's thought - Education, p17

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