A Sample PhD Thesis

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Abstract

A brief summary of the project goes here.

1 Introduction

2 Technical Introduction

2.1 Listings

Some sample code is shown in Listing 2.1.

Listing 2.1: Sample

```
#include <stdio.h> /* needed for printf */
#include <math.h> /* needed for sqrt */

int main()
{
   double x = sqrt(2.0); /* x = √2 */

   printf("x␣=␣%f\n", x);

   return 1;
}
```

2.2 Theorems

Definition 1 (Tautology) A *tautology* is a proposition that is always true for any value of its variables.

Definition 2 (Contradiction) A *contradiction* is a proposition that is always false for any value of its variables.

Theorem 1 *If proposition P is a tautology then $\sim P$ is a contradiction, and conversely.*

Example 1 "It is raining or it is not raining" is a tautology, but "it is not raining and it is raining" is a contradiction.

Remark 1 Example 1 used De Morgans Law $\sim (p \vee q) \equiv \sim p \wedge \sim q$.

2.3 Algorithms

Using algorithm (theorem-like) and tabbing environments:

Algorithm 1 (Gauss-Seidel Algorithm)

1. For $k = 1$ to maximum number of iterations
   2. For $i = 1$ to n
      Set $x_i^{(k)} = \frac{b_i - \sum_{j=1}^{i-1} a_{ij} x_j^{(k)} - \sum_{j=i+1}^{n} a_{ij} x_j^{(k-1)}}{a_{ii}}$
   3. If $|\vec{x}^{(k)} - \vec{x}^{(k-1)}| < \epsilon$, where ϵ is a specified stopping criteria, stop.

Using floating algorithm2e environment:

for $k \leftarrow 1$ **to** *maximum iterations* **do**
  for $i \leftarrow 1$ **to** n **do**
    $x_i^{(k)} = \frac{b_i - \sum_{j=1}^{i-1} a_{ij} x_j^{(k)} - \sum_{j=i+1}^{n} a_{ij} x_j^{(k-1)}}{a_{ii}}$;
  end
  if $|\vec{x}^{(k)} - \vec{x}^{(k-1)}| < \epsilon$ **then**
    Stop
  end
end

Algorithm 2: Gauss-Seidel Algorithm

3 Method

The distance was measured in km and the area in km^2. The acceleration was given in $m\,s^{-2}$.

4 Results

Out of 12 890 experiments, 1289 of them had a mean squared error of 0.346 and 128 of them had a mean squared error of 1.23×10^{-6}.

The acceleration was approximately $9.78\,\mathrm{m\,s^{-2}}$.

5 Conclusions