**Sequence Analysis**

**Document Id 26**

**Concepts**

* **Slice Operations**
* **Peak Signal detection**
* **Prime and Factor based algorithms**

**Section 1 Slice Operations**

[**https://en.wikipedia.org/wiki/Maximum\_subarray\_problem**](https://en.wikipedia.org/wiki/Maximum_subarray_problem)

**Learning Objectives**

* **Slice Models**
* **Kadane's algorithm**
* **Slice Operation applications**

**Guided Learning Tasks**

Implement Kadane's algorithm

Implement a double-slice operation

Lab 1 Practical Application of a slice operation

Lab 1 Solution

**Section 2 Divisibility Operations**

http://math.stackexchange.com/questions/43119/real-world-applications-of-prime-numbers

**Learning Objectives**

* **Prime and factor calculations**
* **Peak Signal detection**

**Guided Learning Tasks**

Sequence Partitoning

Implement Euclidean algorithm (common factors)

Implement a test for a prime number

Lab 2 Practical Simple Peak detection

Lab 2 Solution

**Section 3 Divisibility Operations and Primes**

http://en.wikipedia.org/wiki/Sieve\_of\_Eratosthenes

**Learning Objectives**

* **Sieving** (finding prime numbers)
* **Primality test**

**Guided Learning Tasks**

Implement Sieve of Eratosthenes

Primality test algorithm

Lab 3 Practical Probabilistic tests for large primes

Lab 3 Solution