# Crypt Analyst etc. Positions at Government Agency

**Position #1:**

## Responsibilities

This is a Full-time position to analyze, develop, evaluate, and decipher encryption systems, as well as develop statistical or mathematical models to analyze data and develop methods to correct problems. You will also test crypto models for accuracy and reliability.

Your duties and responsibilities will include researching encryption methods, cryptography implementation, and identifying new ways to protect information.

* As part of your daily routine you will analyze codes and ciphers, develop cryptographic systems and implementations, and use a variety of other methods to protect data.
* Develop and analyze embedded system Encryption Key Management Plans
* Develop crypto in various environments (smartcards, PCs, Unix systems)
* Code optimization, countermeasure conception
* Utilize reverse engineering concepts and processes with embedded systems to accomplish goals.

## Qualifications

* Bachelor’s degree in mathematics, information technology, or computer science with an emphasis on cryptography. Master’s degree preferred.
* Demonstrated working knowledge of Cryptography, Entropy, and associated programming/computation sciences
* Demonstrated technical report and technical documentation writing skills
* Demonstrated ability to explain cryptography principles to embedded system designers
* Experience in crypto security development and encryption authentication, certificates, PKCS, etc.
* Knowledge of embedded software development
* Candidates will have demonstrated capabilities in cryptography, entropy, error correction, and the associated mathematical and computational/programming sciences.
* Cryptanalysis of algorithms
* Public Key Cryptography concepts and protections of embedded cryptographic libraries
* Knowledge or script tools, assembly codes, and crypto-assembly codes
* Sound knowledge of non-invasive attacks and side channel analysis (i.e. timing attacks, simple and differential analysis, fault injection, etc.)
* Broad experience with reverse engineering, especially on embedded systems
* You will travel between 4-6 nights a month in the US.
* Possess US citizenship

## How to apply

Send your resume/CV to Kanako Tone at [ktone@purdue.edu,](mailto:ktone@purdue.edu) including your contact information (both phone and email) and desired start date.

## Do not be afraid to apply if you do not meet all requirements/skills currently!

**Position #2:**

**Responsibilities**

* Candidate will use their processor expertise to help our organization of systems engineers in understanding processor design and architecture details, operations, and implementation into systems.
* Candidate will be responsible for contributing to the team’s systems engineering success. The candidate will analyze and report on: system and processor requirements, existing processor performance, processor design characteristics and limitations, design trades, and device physics implications.
* Position is 25% lab and 75% desk.

## Qualifications

* Bachelor’s in Computer Science, Computer Engineering, or Electrical Engineering. Master’s degree preferred.
* You must have an expert knowledge and experience in semiconductor device physics, design, development, and application of today’s processors; along with a working knowledge of processor security principles, countermeasures to attacks, and secure processor architectures.
* Knowledge of memory structures, on-board/off-board communication protocols, cryptographic engines, and power structures is required.
* Knowledge of current and new technologies, such as FinFET, is required
* Our preferred candidate will have experience in design tools, design rules, modeling and simulation, layout, fabrication, test, and failure analysis.
* In addition, embedded system design experience and real-time operating system knowledge would be beneficial.
* The position will require you to travel overnight 4-6 times in a month in the US.
* You must be proficient in MS Office Word and Excel and have good interpersonal skills and be able to make technical presentations to management and customers.
* Possess US citizenship

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## Do not be afraid to apply if you do not meet all requirements/skills currently!

**Position #3: (Intern position)**

**Responsibilities**

* Candidate will use their embedded systems design knowledge to assist in production of reconfigurable cryptographic hardware.
* Candidate must have solid understanding of abstract algebra (rings and polynomial arithmetic).

## Qualifications

* You must be knowledgeable in most of the areas below and/or have taken courses below:

- C/C++ (ECE264, ECE308)

* + Assembly (ECE362, ECE495)
  + VHDL (ECE337)
  + FPGA Design (ECE337)
  + Cryptography (CS355)
  + Discrete Mathematics (EE369)
  + Abstract Algebra (MA453)
  + Electromagnetism (ECE311)
  + Statistics/Probability (ECE302)
* Possess US citizenship
* Start as soon as possible
* Both undergraduate and graduate students are encouraged to apply.

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