Charlie Blake

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SUMMARY

Senior radar systems engineer with eight years of experience developing and analyzing mission critical radar capabilities from requirements through integration and test. Builds concepts of operations, **radar processing algorithms**, software requirements, performance models, and analysis tools using MATLAB, Python, and C++. Applies statistical and numerical analysis to **search and track** behavior, pulse Doppler and **single pulse waveforms**, beam patterns, PRIs, **firm track range**, and ducting conditions. Reviews B5 requirements, Blake sheets, electronic attack, and electronic protection considerations, then translates findings into practical systems and software changes. Works closely with systems and software engineers, leadership, and government customers through clear technical writing and presentations. Active U.S. government Secret security clearance and U.S. citizenship support mission focused radar engineering work.

EXPERIENCE

Senior Radar Systems Engineer

February 2024 - Present

Northfield Defense Systems *Nashua, NH*

Leads systems analysis for a ground based radar product, linking operational concepts, search and track requirements, processing behavior, architecture decisions, and verification evidence. Coordinates technical decisions with systems and software engineers while presenting reproducible findings to leadership and government customers.

- Led radar analysis linking operational concepts, search requirements, and verification evidence for product decisions.
- Built **MATLAB** models for detection, track formation, waveform behavior, and **firm track range** analysis.
- Created **Python** tools for statistical performance studies and faster investigation of anomalous radar behavior.
- Prototyped processing logic before coordinating implementation details with C++ software engineers.
- Redlined **B5 requirements**, preserving traceability between operational intent, architecture choices, and test evidence.
- Evaluated **pulse Doppler**, single pulse, PRIs, beam patterns, **Blake sheets**, and EA EP considerations.
- Presented resolution options to leadership and government customers through reproducible analysis and clear technical briefings.

Radar Systems Engineer

June 2021 - January 2024

Granite Signal Labs *Manchester, NH*

Developed radar performance analyses supporting search, acquisition, and track capabilities from design maturation through system test. Connected recorded data, software requirements, atmospheric assumptions, and engineering models to guide integration troubleshooting and customer recommendations.

- Developed **search and track** performance analyses supporting design maturation and system **test** decisions.
- Built Python tools that summarized recorded radar data and isolated unexpected track behavior.
- Authored **software requirements** covering interfaces, algorithm expectations, edge cases, and acceptance criteria.
- Compared waveform and beam pattern trades using **pulse Doppler** concepts, **PRIs**, and range calculations.
- Investigated **integration** anomalies by comparing measured behavior with models and targeted parameter changes.
- Prepared technical reports documenting methods, limitations, evidence, and recommended engineering actions.
- Briefed customers on radar findings, helping teams select practical corrections during system maturation.

Associate Radar Systems Engineer

July 2019 - May 2021

Pioneer Sensor Engineering *Bedford, MA*

Supported radar algorithm and system performance investigations in laboratory and integration environments. Contributed analysis scripts, operational scenarios, requirement updates, trade studies, anomaly reproduction, and review materials under senior engineering guidance.

- Supported radar investigations using MATLAB, Python, and **C++** across laboratory and integration environments.
- Implemented scripts comparing detection and track data across test runs and repeatable performance patterns.
- Traced operational scenarios into search, track, and software behavior for requirement updates.
- Evaluated waveform, beam scheduling, and PRI behavior during supervised trade studies.
- Reproduced integration anomalies, organized evidence, and verified candidate corrections against recorded data.
- Developed engineering notes and presentation materials for design reviews and customer discussions.

Radar Analysis Engineer

June 2018 - June 2019

Atlantic Applied Research *Lexington, MA*

Performed radar data analysis for research prototypes using MATLAB, Python, and C++. Built reusable numerical utilities, supported search and track investigations, maintained traceability documentation, and presented findings during team reviews.

- Analyzed prototype radar data with MATLAB and Python against analytical performance expectations.
- Created reusable plotting utilities that improved consistency across laboratory evaluations and technical reports.
- Checked **search and track** inputs, test conditions, and calculations during investigation support.
- Contributed C++ updates to analysis utilities under peer review and **verification** practices.
- Maintained requirement and test documentation linking observed behavior with follow up engineering questions.
- Presented analysis summaries during team reviews while building foundational **radar systems** knowledge.

PROJECTS

Radar Firm Track Range Analysis 2024

Developed a reusable analysis approach for firm track range under nominal and ducting atmospheric conditions. Combined numerical models, Blake sheet construction, and radar performance data to clarify range behavior and support engineering discussions.

Search and Track Performance Toolkit 2022

Created MATLAB and Python utilities for recorded radar data, statistical summaries, waveform review, and anomaly isolation. Tools gave engineering teams a clearer path from observed behavior to practical software investigation.

LEADERSHIP & AWARDS

- Recognized by engineering leadership for clear radar performance briefings and customer ready technical findings.
- Selected as a trusted reviewer for B5 search and track requirement updates and traceability.
- Received team recognition for reusable MATLAB and Python analysis tools that improved investigation consistency.

EDUCATION

Master of Science in Electrical Engineering 2020

University of Massachusetts Lowell GPA: 0 *Lowell, MA*

Coursework: *Radar systems, signal processing, numerical analysis, control systems*

Bachelor of Science in Electrical Engineering 2018

University of New Hampshire GPA: 0 *Durham, NH*

Coursework: *Electromagnetics, digital signal processing, software engineering, probability*

CERTIFICATIONS

- Active U.S. Government Secret Security Clearance 2026
- Institute of Electrical and Electronics Engineers Membership 2026

TECHNICAL SKILLS

- **Programming Languages:** MATLAB, Python, C++
- **Radar Processing:** Detection algorithms, track formation, processing logic
- **Radar Waveforms:** Pulse Doppler, single pulse, waveform analysis
- **Search And Track:** Search beams, track behavior, acquisition
- **Performance Analysis:** Statistical analysis, numerical analysis, range calculations
- **Atmospheric Analysis:** Nominal conditions, ducting conditions, firm track range
- **Requirements Engineering:** Software requirements, B5 requirements, acceptance criteria
- **Systems Architecture:** Radar architecture, software architecture, system design
- **Analysis Tools:** MATLAB models, Python tools, plotting utilities
- **Electronic Warfare:** Electronic attack, electronic protection, waveform considerations
- **Technical Communication:** Technical writing, oral presentations, customer briefings
- **Verification And Test:** Test evidence, integration testing, recorded data

SKILLS

- Radar systems
- Radar processing
- MATLAB
- Python
- C++
- Statistical analysis
- Numerical analysis
- Search and track
- Pulse Doppler
- Single pulse waveforms
- Beam patterns
- PRIs
- Blake sheets
- Firm track range
- Technical presentations

PROFESSIONAL AFFILIATIONS

- Member, Institute of Electrical and Electronics Engineers, focused on electrical engineering and radar technology.
- Participant, Association of Old Crows, with interest in electronic attack and electronic protection.

LANGUAGES

- English (Native)
- Spanish (Intermediate)

ADDITIONAL INFORMATION

Work Status : Authorized to work in United States. No sponsorship required.

REFERENCES

AVAILABLE ON REQUEST