American GNC Corporation

ADVANCED TECHNOLOGIES FOR CONTEMPORARY PROBLEMS OF CRITICAL IMPORTANCE

MISSION

American GNC Corporation ("AGNC") dedicates itself to providing advanced & innovative engineering technologies, scientific analysis, applications support, and cost effective products to its customers.

VALUES

AGNC strives to build upon a reputation for important contributions in the fields of engineering and science, while constantly improving its products and satisfying both customers and employees. With extensive project management expertise and responsibility, our team is committed to the success of each of its programs.

VISION

AGNC is committed to delivering effective and state-of-the-art solutions while meeting technical, cost, and scheduling needs of customers by:

- Designing, developing, and manufacturing high quality products
- Applying the coremicro® series to practical applications with a focus on miniaturization, reliability, and embedded intelligence
- Improving the quality of life for the next generation by continuing long-term research and development efforts within diverse fields

CORE COMPETENCIES

Guidance, Navigation, Control, and Communications

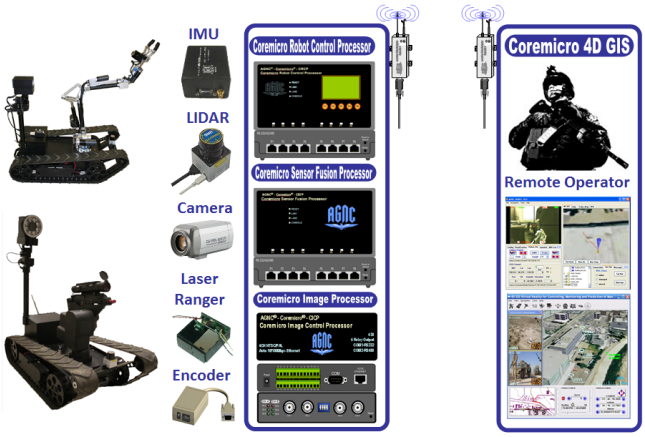
American GNC Corporation is actively involved in pioneering efforts related to inertial sensors, interruption-free positioning, and INS/GNSS fusion. AGNC produced the world's first MEMS rate integrating gyroscope in 1999, setting the stage for continued development of its coremicro® IMU product series, and is among the very first companies to patent microelectromechanical (MEMS) Inertial Measurement Unit (IMU) technology, which is commonly found in handheld consumer electronics such as tablets and smartphones. AGNC has always been aware of the pros and cons of different positioning technologies, and so engaged in breakthrough efforts during the late 90's for the fusion of inertial data with other sources, which is now decades later, being utilized by consumer devices for applications such as indoor or urban navigation.

AGNC continues to develop GNCC technologies and remains involved in the technology design and integration for critical commercial and government systems including autonomous vehicles, aircraft, land vehicles, marine vehicles, missiles, satellites, spacecraft, robotics, underwater vehicles, and many other platforms.

Unmanned Systems and Robotics

Enhancing autonomy of unmanned systems with technologies in the areas of navigation, control, intelligent processing, and health diagnostics and prognostics is a key focus at AGNC. The company's coremicro® Robots serve as ideal platforms for integrating new technologies that reduce operator workload and increase autonomy. Our capabilities include target detection and tracking, obstacle avoidance, localization, terrain mapping, route formulation, among many others.

Applications of AGNC's robotics technologies include: (i) GPS-denied and unstructured navigation; (ii) UAV and UGV surveillance and reconnaissance; (iii) surgical support by miniaturized robots; (iv) layered sensing architectures for military command and control; and (v) terrain analysis and classification by computer vision.



Systems Health Monitoring and Smart Sensors

Prognostics Health Monitoring (PHM) increases system reliability and supports maintenance operations as well as automated logistics. Depending on the applications, PHM technology can involve sensing architectures, system modeling, fault characterization and analysis, signal processing, and pattern recognition. AGNC is actively enhancing PHM capabilities with: (a) automated statistical data analysis; (b) diagnostic reasoning and dynamic learning; (c) standardizing architectures; (d) complex system modeling; (e) networking with mobile technologies; and (f) ruggedizing designs.

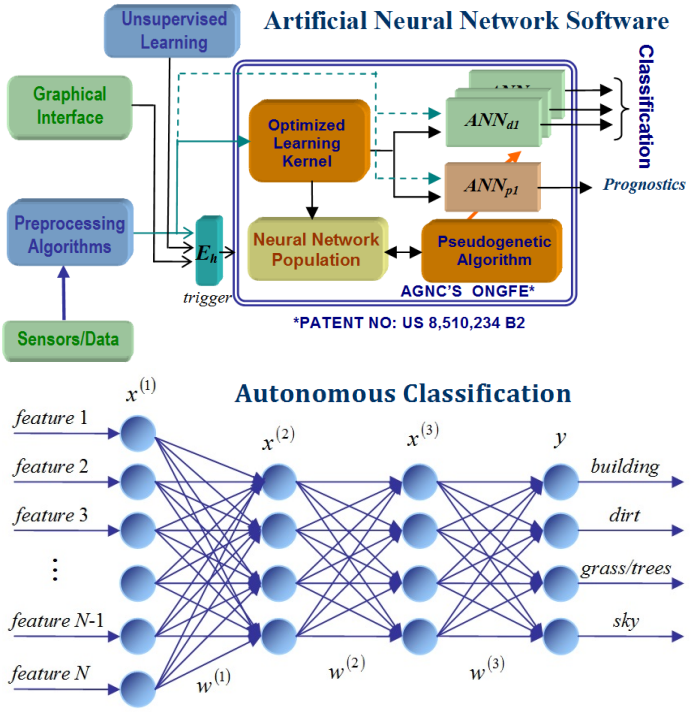
Advanced Signal Processing for Vibration Analysis

coremicro Reconfigurable Embedded Smart Sensor Node (CRE-SSN)

The integration of configurable and standardized smart sensors with embedded data acquisition, flexible communications, self-diagnostics, Transducer Electronic Data Sheets (TEDS), evolving learning, and embedded processing facilitates PHM applications. AGNC's "Distributed Intelligent Health Monitoring" framework consists of networks of smart sensors serving as distributed computational platforms with intelligence for improving monitoring operations. This technology is a strategy to ease technological upgrades, increase system reliability, reduce operator workload, and increase modularity, scalability, and extensibility. AGNC's smart sensor solutions can be applied to either retrofitting existing systems or for building new systems.

Intelligent Systems and Neuroscience

Artificial intelligence techniques allow for the realization of cognitive systems which have numerous applications such as automating decision making processes, diagnostics and prognostics, pattern recognition, resource allocation, intelligent control, forecasting, etc. AGNC is actively designing and developing technologies that address the engineering and science aspects of new learning methods (architectures, theory, dynamics, self-organization, genetic algorithms).



Our intelligent systems products include:

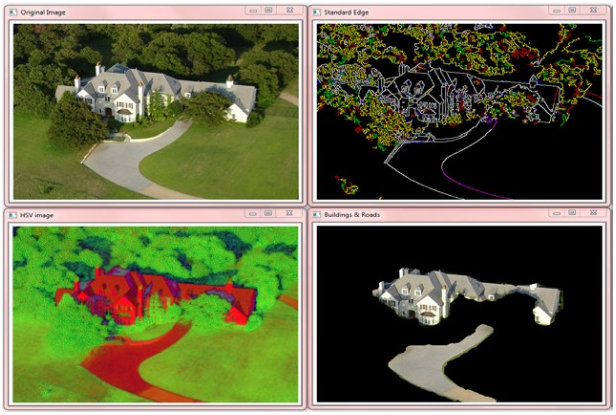
- Optimized Neuro Genetic Fast Estimator (ONGFE). This product contains a rich set of neural network design tools for diverse uses. Features include pattern recognition, function approximation, unsupervised clustering, optimization, and an API.
- Embedded Collaborative Learning Engine (eCLE). This AI-software tool allows for the expansion of knowledge in a cognitive system based on incremental and dynamic collaborative learning.

Advanced Modeling and Complex Systems Analysis

Complex systems engineering involves understanding sophisticated interrelations among systems, subsystems, and components, where even small design changes can have a major impact on these elements. AGNC is developing new tools to improve the systems design process by making interactions among subsystems and components clear and for reducing semantic gaps among engineers across multiple disciplines.

Autonomous Computer Vision

Everyday vision-based tasks of humans such as recognizing familiar places, driving a car, or reading another person's expression may seem trivial. However, there are significant technological barriers for implementing such capabilities in computer vision systems. AGNC is dedicated to developing image processing solutions and has in-depth experience in areas such as image enhancement, visual odometry, scene understanding, segmentation, and target detection & tracking.



PRODUCTS

Health Monitoring:

- Autonomous Intelligent Sensor Tracking System (AISTS)
- coremicro Reconfigurable Embedded-Smart Sensor Node (CRE-SSN)
- coremicro Real-Time Structure Health Monitoring and Vibration Analysis

Robotics:

- 4D GIS Virtual Reality for Controlling, Monitoring and Prediction of Manned/Unmanned Systems
- coremicro Robot II: Autonomous Robotic Injury Assessment System
- coremicro Robot III: Intelligent Lightweight Remotely Controlled Station
- coremicro Robot Control Processor (CRCP)
- coremicro Sensor Fusion Processor (CSFP)
- coremicro Image Processor (CIP)

Guidance and Navigation:

- Gyrocompass Modeling and Simulation System™
- Universal GPS/INS/AHRS Integration Unit
- coremicro® IMU (AGNC®-2000CMIMU)
- coremicro AHRS/INS Unit: Universal Navigation and Control Unit (UNCU)
- Universal Navigation and Control Unit with GPS Chipset (UNCUN1)
- coremicro AHRS/INS/DGPS Integration Unit

Artificial Neural Networks:

- Optimized Neuro Genetic Fast Estimator (ONGFE)
- embedded Collaborative Learning Engine (eCLE)

ABOUT THE COMPANY

American GNC Corporation ("AGNC") is a high technology company that specializes in inventing and applying advanced and innovative technologies to practical problems within the fields of Guidance, Navigation, Control and Communications (GNCC), Systems Health Monitoring, Intelligent Processing, and Autonomous Robotics. After its establishment in 1986, AGNC was actively involved in pioneering efforts related to inertial sensors, interruption-free positioning, and INS/GNSS fusion. Our efforts since expanded into complementary areas with the goals of increasing reliability, enhancing autonomy, and obtaining a greater understanding of systems. AGNC is a dynamic organization that strives for innovations and infusion of new technologies within government and commercial systems.

INTELLECTUAL PROPERTY

- AGNC has an extensive porfilio of 79 issued patents, mainly in the areas of inertial sensors, GNSS, and MEMS technology, which are all fields with significant commercial relevance
- Portfolio contains priority filing dates going back to 1997, which predates products currently on market
- AGNC patents have been cited over 1,600 times
- Portfolio has been referenced by companies such as Honeywell, Honda, Airbus, Apple, Google, Motorola, Analog Devices, Texas Instruments, Sony, Invensense, STMicroelectronics, Robert Bosch GMBH, Samsung, Qualcomm, Broadcom, Nokia, Microsoft, Garmin, Trimble, TomTom and IBM
- AGNC utilized the investment of over $40 million in R&D towards the development of the portfolio

SINCE 1986

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