

# AUTOMATION SPECIALIST

## JOB DESCRIPTION

Automation Specialists develop web-based programs to automate the collection, transformation, and delivery of a company's operating data. Automation Specialists help improve an organization's operating systems through the review, testing, repair, and maintenance of these systems. They also test the performance of operating systems, install electrical or electronic parts, and inspect equipment to detect potential defects.

## JOB DUTIES

- Design, program, test, and commission automation instrumentation and control systems
- Supervise industrial automated equipment and processes
- Maintain, debug, and troubleshoot robotic and PLC programs, including hardware and software
- Implementation and upgrading of PLC programs and robotic applications
- Read and interpret equipment manuals to develop a controls narrative or adjust current equipment functionality
- Modify existing applications and programs as requested to improve organization's production and equipment reliability

## COMMON SKILLS

- Programmable Logic Controllers (PLC)
- Robotics
- Automation
- Systems design
- CAD design
- HMI programming
- Networking
- Troubleshooting
- Operations
- Detail oriented

## EDUCATION

### Algonquin College

Bachelor of Automation and Robotics

## SECTORS

- ICT
- Agriculture
- Finance and Insurance
- Healthcare
- Manufacturing
- Transportation, Logistics, and Warehousing

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$29.02/hr

Median annual wage: \$60,399

### Ontario

Median hourly wage: \$30.00/hr

Median annual wage: \$62,400

## LOCAL DEMAND

### 2021 Location Quotient

1.50

### Number of employees locally

2018: 316

2019: 318

2020: 312

# AUTOMOTIVE CYBERSECURITY PROGRAMMER

## JOB DESCRIPTION

Automotive Cybersecurity Programmers offer services and develop embedded software and tools to ensure all types of vehicles are protected from cyber-attacks.

## JOB DUTIES

- Implementation of in-vehicle cybersecurity strategies and security features
- Provide threat modeling service for cybersecurity relevant vehicle feature and modules
- Find security vulnerabilities by generating various attack scenarios for target systems
- Development of countermeasures for identified security vulnerabilities
- Write and interpret specifications for both internal and external stakeholders
- Consultant for security experiments research projects and programs
- Provide technical cybersecurity expertise

## COMMON SKILLS

- Knowledge of in-vehicle cybersecurity systems
- Embedded hardware security
- Cryptography fundamentals
- Automotive connectivity (cellular, satellite, Bluetooth)
- Automotive networking (CAN, LIN, Ethernet, etc.)
- Understanding of architecture, development, and design principles
- Communication
- Analytical skills
- Ability to work independently and collaboratively

## EDUCATION

No Canadian programs available

## SECTORS

- ICT
- Manufacturing
- Transportation, Logistics, and Warehousing

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$38.42/hr

Median annual wage: \$79,919

### Ontario

Median hourly wage: \$39.00/hr

Median annual wage: \$81,120

## LOCAL DEMAND

**2021 Location Quotient**  
0.29

**Number of employees locally**

2018: 731

2019: 754

2020: 753

# AUTOMOTIVE SOFTWARE PROGRAMMER

## JOB DESCRIPTION

Automotive Software Programmers are responsible for the design and development of software systems used in car technology. These systems may be used to control various environmental systems of a vehicle, such as controls for automated technologies like automated parking and blind spot monitoring.

## JOB DUTIES

- Develop data processes to evaluate the performance and reliability of designs
- Develop and upgrade next generation features and code change documentation according to approved safety standards
- Assess and develop innovative maintenance and quality assurance for operating systems and applications software
- Collect and document automotive requirements and develop specifications and perform reverse engineering processes

## COMMON SKILLS

- Understanding of ECU/TCU software
- Embedded systems
- C/C++
- Python
- Analytic skills
- Coding
- Programming languages
- Communication
- Organization

## EDUCATION

**University of Windsor**

Bachelor of Computer Science (Software Engineering)

## SECTORS

- ICT
- Manufacturing
- Transportation, Logistics, and Warehousing

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$45.10/hr

Median annual wage: \$93,818

### Ontario

Median hourly wage: \$46.15/hr

Median annual wage: \$95,992

## LOCAL DEMAND

**2021 Location Quotient**  
0.28

**Number of employees locally**

2018: 162

2019: 169

2020: 168

# BIG DATA ANALYST

## JOB DESCRIPTION

Big Data Analysts are responsible for utilizing data analytics from multiple sources to evaluate an organization's technical performance and providing recommendations that would be beneficial for businesses. Big Data Analysts should be able to determine trends in data sets, accurately read data models and code, and develop data rules from their analyses. They often visualize and report their findings by preparing comprehensive reports, graphs, charts, etc.

## JOB DUTIES

- Gather and accumulate data from disparate sources
- Cleaning, organization, processing, and analysis of data to extract valuable insights and information
- Identify new courses of data and develop methods to improve data mining, analysis, and reporting
- Present findings in reports to help organizations or businesses in decision-making process
- Monitor and maintain the performance of data mining systems and troubleshoot any issues
- Keep track of trends and correlational patterns among complex datasets
- Perform routine analysis tasks to support day-to-day business functioning and decision-making

## COMMON SKILLS

- Programming languages (R, Python, Ruby, C++, Java, Scala, Julia)
- Quantitative aptitude
- Computational framework knowledge
- Microsoft Excel
- SQL
- SPSS
- Data warehousing
- Business acumen
- Communication

## EDUCATION

### Ryerson University

Certificate in Data Analytics, Big Data, and Predictive Analytics

## SECTORS

- ICT
- Agriculture
- Manufacturing
- Healthcare
- Transportation, Logistics, and Warehousing

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$34.69/hr

Median annual wage: \$72,163

### Ontario

Median hourly wage: \$35.90/hr

Median annual wage: \$74,672

## LOCAL DEMAND

**2021 Location Quotient**  
0.60

**Number of employees locally**

2018: 185

2019: 235

2020: 248

# BLOCKCHAIN DEVELOPER

## JOB DESCRIPTION

Blockchain Developers are responsible for developing and optimizing blockchain protocols, crafting the architecture of blockchain systems, developing smart contracts and web apps using blockchain technology.

## JOB DUTIES

- Determining blockchain technology needs and functionalities
- Creating application features and interfaces by using programming languages and writing codes
- Applying the latest cryptology techniques to protect digital transaction data against cyberattacks and information hacks
- Brainstorm and help evaluate applications for new tools and technologies as they continually evolve
- Maintain and extend current client- and server-side applications responsible for integration and business logic
- Document new solutions as well as maintaining that of existing ones

## COMMON SKILLS

- C++
- Java, JavaScript
- Python
- Knowledge of programming languages
- Back-end development
- Software development
- P2P networks
- Cryptography and blockchain protocols
- Analytical skills
- Problem-solving
- Communication

## EDUCATION

**George Brown College**

Blockchain Development Certificate

## SECTORS

- ICT
- Finance
- Healthcare
- Transportation, Logistics, and Warehousing
- Retail
- Manufacturing

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$37.90/hr

Median annual wage: \$78,840

### Ontario

Median hourly wage: \$38.46/hr

Median annual wage: \$79,997

## LOCAL DEMAND

**2021 Location Quotient**  
0.37

**Number of employees locally**

2018: 642

2019: 633

2020: 622

# ELECTRICAL ENGINEER

## JOB DESCRIPTION

Electrical engineers design, develop, and test electrical devices and equipment, including communications systems, power generators, motors and navigation systems, and electrical systems for automobiles and aircrafts. They also oversee the manufacturing of these devices, systems, and equipment.

## JOB DUTIES

- Conduct research into the feasibility, design, operation and performance of electrical generation and distribution networks, electrical machinery and components and electronic communications, instrumentation and control systems, equipment, and components
- Prepare material cost and timing estimates, reports and design specifications for electrical and electronic systems and equipment
- Design electrical and electronic circuits, components, systems, and equipment
- Conduct micro or nanodevices simulations, characterization, process modeling and integration in the development of new electronic devices and products
- Supervise and inspect the installation, modification, testing, and operation of electrical and electronic systems and equipment
- Develop maintenance and operating standards for electrical and electronic systems and equipment
- Investigate electrical or electronic failures
- Supervise technicians, technologists, programmers, analysts, and other engineers

## COMMON SKILLS

- Programmable Logic Controllers (PLC)
- AutoCAD
- Electrical design
- Robotics programming
- Automation
- Human-Computer interaction
- Electrical systems
- Communication
- Problem solving
- Troubleshooting
- Microsoft Office

## EDUCATION

**University of Windsor**

Bachelor of Electrical Engineering (with optional co-op)

## SECTORS

- ICT
- Agriculture
- Construction
- Manufacturing
- Public Administration
- Transportation, Logistics, and Warehousing
- Utilities

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$49.14/hr

Median annual wage: \$102,207

### Ontario

Median hourly wage: \$45.00/hr

Median annual wage: \$93,600

## LOCAL DEMAND

### 2021 Location Quotient

0.73

### Number of employees locally

2018: 311

2019: 321

2020: 310

# INTELLIGENT TRANSPORTATION SYSTEM EXPERT

## JOB DESCRIPTION

Intelligent Transportation System (ITS) Experts lead in the development of ITS infrastructure, traffic signals, and integration of traffic control systems to improve the safety, efficiency, and sustainability of transportation networks, to reduce traffic congestion and to enhance drivers' experiences.

## JOB DUTIES

- Responsible for delivery of specialized engineering functions in support of traffic operations including road and highway signage, road and highway traffic management, and work zone traffic control
- Monitoring and managing ITS devices on transportation fiber-optic networks
- Customization of existing systems to leverage data for traffic engineering purposes
- Developing specifications for implementation of new systems

## COMMON SKILLS

- Communication
- Mathematical skills
- Knowledge of road and highway control systems operation
- Proficiency in traffic analysis
- Synchro
- SimTraffic
- Vistro
- VISSIM
- AutoCAD
- Microstation

## EDUCATION

**University of Waterloo**  
Civil Engineering

## SECTORS

- ICT
- Construction
- Public Administration
- Transportation, Logistics, and Warehousing
- Utilities

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$36.58/hr  
Median annual wage: \$76,090

### Ontario

Median hourly wage: \$38.46/hr  
Median annual wage: \$79,997

## LOCAL DEMAND

**2021 Location Quotient**  
0.69

**Number of employees locally**

2018: 164  
2019: 154  
2020: 152

# MACHINE LEARNING SPECIALIST

## JOB DESCRIPTION

Machine Learning Specialists create machine learning models and retraining systems. They design self-running software to automate predictive models, focused on developing algorithms which can “learn” from or adapt to data and make predictions.

## JOB DUTIES

- Design and develop machine learning algorithms
- Run machine learning tests and experiments
- Implement appropriate machine learning algorithms
- Discover, design, and develop analytical methods to support innovative approaches of gathering data and information processing
- Extend existing machine learning libraries and frameworks

## COMMON SKILLS

- Communication
- Knowledge of code languages (Python, Java, and R)
- Knowledge of machine learning frameworks (ex. Keras or PyTorch)
- Knowledge of machine learning libraries (ex. Scikit-learn)
- Teamwork
- Analytical
- Problem-solving
- Understanding of data structures
- Understanding of data modeling
- Understanding of software architecture

## EDUCATION

**York University**

Certificate of Machine Learning

## SECTORS

- ICT
- Construction
- Manufacturing
- Transportation, Logistics, and Warehousing
- Utilities

## RELATED WAGES

### Windsor-Essex

Median hourly wage: \$45.10/hr

Median annual wage: \$93,818

### Ontario

Median hourly wage: \$46.15/hr

Median annual wage: \$95,992

## LOCAL DEMAND

### 2021 Location Quotient

0.28

### Number of employees locally

2018: 162

2019: 169

2020: 168

# PREDICTIVE ANALYST

## JOB DESCRIPTION

Predictive Analysts use data, statistical algorithms, and machine learning techniques to identify the likelihood of future outcomes based on historical data. They go beyond knowing what has happened to providing a best assessment of what will happen in the future.

## JOB DUTIES

- Perform ad-hoc analysis of data using multiple data analysis software
- Measure program or business performance, identifying opportunities and presenting recommendations for improvements
- Work with stakeholders to determine appropriate hypotheses for test and learn/experimental design and test
- Define analytics reporting procedures and predictive model targets and requirements
- Structure predictive analytical solutions to address business objectives
- Synthesize results across different data sources to predict customer and market activity
- Design and develop divisional dashboards and custom reports and present findings to stakeholders

## COMMON SKILLS

- Problem-solving
- Microsoft Office suite
- Microsoft Access
- Structured Query Language (SQL)
- VBA
- Critical thinking
- R or Python (Statistical programming)
- Data visualization
- Presentation skills
- Machine learning

## EDUCATION

### York University

Certificate in Advanced Data Science and Predictive Analytics

### Ryerson University

Certificate in Data Analytics, Big Data, and Predictive Analytics

## SECTORS

- ICT
- Agriculture
- Finance and Insurance
- Healthcare
- Manufacturing
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### Ontario

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Median annual wage: \$81,120

## LOCAL DEMAND

### 2021 Location Quotient

0.39

### Number of employees locally

2018: 731

2019: 754

2020: 753

# SOFTWARE DEVELOPER

## JOB DESCRIPTION

Software Developers are responsible for the development, design, and implementation of new or modified software products or ongoing business products. They research, design, evaluate, integrate, and maintain software applications, technical environments, operating systems, embedded software, information warehouses, and telecommunications software.

## JOB DUTIES

- Collect and document users' requirements and develop logical and physical specifications
- Research, evaluate, and synthesize technical information to design, develop, and test computer-based systems including mobile applications
- Assess, test, troubleshoot, document, upgrade, and develop maintenance procedures for operating systems, communication environments, and applications software
- App coding and development
- Software development and programming
- Developing websites and maintaining internal databases
- Managing current software and creating new software
- Researching, designing, implementing, and managing software programs
- Testing and evaluating new programs
- Identifying areas for modification in existing programs and developing these modifications

## COMMON SKILLS

- Coding and programming languages
- Organization
- Communication
- Database management
- Systems knowledge
- Critical thinking
- Mathematical aptitude
- Problem-solving

## EDUCATION

**University of Windsor**

Bachelor of Computer Science (Software Engineering)

## SECTORS

- ICT
- Manufacturing
- Public Administration
- Transportation, Logistics, and Warehousing
- Utilities
- Agriculture

## RELATED WAGES

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## LOCAL DEMAND

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