



Labor Market Analysis for Program Recommendation Artificial Intelligence Entrepreneurship Occupations Evergreen Valley College

Prepared by the Bay Region Center of Excellence for Labor Market Research

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Recommendation

Based on all available data, there appears to be an “undersupply” of Artificial Intelligence Entrepreneurship workers compared to the demand for this cluster of occupations in the Bay Region and in the Silicon Valley Sub-Region (Santa Clara County). There is a projected annual gap of about 20,978 students in the Bay Region and 9,570 students in the Silicon Valley Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0799.00 - Other Information Technology programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Evergreen Valley College and in the region.

This report profiles Artificial Intelligence Entrepreneurship Occupations in the 12 county Bay Region and in the Silicon Valley Sub-Region for Program Recommendation at Evergreen Valley College.

- **Computer and Information Systems Managers (11-3021):** Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.
Typical Entry-Level Educational: Bachelor’s degree
Typical On-the-Job Training: None
Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 21%
- **Software Developers (15-1252):** Research, design, and develop computer and network software or specialized utility programs. Analyze user needs and develop software solutions, applying principles and techniques of computer science, engineering, and mathematical analysis. Update software or enhance existing software capabilities. May work with computer hardware engineers to integrate hardware and software systems, and develop specifications and performance requirements. May maintain databases within an application area, working individually or coordinating database development as part of a team.
Typical Entry-Level Educational: Bachelor’s degree
Typical On-the-Job Training: None
Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 11%
- **Data Scientists (15-2051):** Develop and implement a set of techniques or analytics applications to transform raw data into meaningful information using data-oriented programming languages and visualization software. Apply data mining, data modeling, natural language processing, and machine learning to extract and analyze information from large structured and unstructured datasets. Visualize, interpret, and report data findings.

May create dynamic data reports.

Typical Entry-Level Educational: Bachelor's degree

Typical On-the-Job Training: None

Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 10%

Occupational Demand

Table 1. Employment Outlook for Artificial Intelligence Entrepreneurship Occupations in the Bay Region

Occupation	2023 Jobs	2028 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Wage	Median Hourly Wage
Computer and Information Systems Managers	48,348	53,076	4,727	10%	20,916	4,183	\$90	\$113
Software Developers	180,016	206,525	26,509	15%	77,417	15,483	\$76	\$90
Data Scientists	13,963	16,433	2,470	18%	6,914	1,383	\$60	\$79
Total	242,327	276,034	33,707	14%	105,247	21,049	\$78	\$94

Source: Lightcast 2024.3

The Bay Region includes: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Artificial Intelligence Entrepreneurship Occupations in the Silicon Valley Sub-Region

Occupation	2023 Jobs	2028 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Wage	Median Hourly Wage
Computer and Information Systems Managers	20,530	22,156	1,626	8%	8,438	1,688	\$101	\$135
Software Developers	94,421	105,242	10,822	11%	37,142	7,428	\$80	\$95
Data Scientists	4,889	5,650	761	16%	2,303	461	\$68	\$82
Total	119,840	133,048	13,208	11%	47,883	9,577	\$83	\$101

Source: Lightcast 2024.3

Silicon Valley Sub-Region includes: Santa Clara County

Job Postings in the Bay Region and Silicon Valley Sub-Region

Table 3. Number of Job Postings by Occupation for the latest 12 months

Occupation	Bay Region	Silicon Valley
Software Developers	38,920	20,691
Data Scientists	17,288	8,205
Computer and Information Systems Managers	755	238

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Table 4a. Top Job Titles in Job Postings for Artificial Intelligence Entrepreneurship Occupations in the Bay Region

Title	Bay	Title	Bay
Software Engineers	3,892	Solutions Architects	635
Machine Learning Engineers	1,975	DevOps Engineers	611
Data Scientists	1,784	Full Stack Engineers	592
Staff Software Engineers	1,235	Infrastructure Software Engineers	569
Software Development Engineers	1,017	Software Engineering Managers	526
Full Stack Software Engineers	895	Software Engineering Interns	500
Data Analysts	848	Embedded Software Engineers	432
Principal Software Engineers	838	iOS Software Engineers	425
Machine Learning Software Engineers	720	Android Developers	417

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Table 4b. Top Job Titles in Job Posting for Artificial Intelligence Entrepreneurship Occupations in the Silicon Valley Sub-Region

Title	Silicon Valley	Title	Silicon Valley
Software Engineers	1,960	Infrastructure Software Engineers	305
Machine Learning Engineers	1,180	Software Engineering Interns	300
Software Development Engineers	797	DevOps Engineers	294
Data Scientists	768	Android Developers	287
Staff Software Engineers	612	iOS Software Engineers	276
Machine Learning Software Engineers	520	Software Engineering Managers	272
Principal Software Engineers	485	Solutions Architects	263
Full Stack Software Engineers	425	Embedded Software Engineers	255
Data Analysts	337	iOS Developers	253

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Industry Concentration

Table 5. Industries Hiring for Artificial Intelligence Entrepreneurship Occupations in the Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2023)	Jobs in Industry (2028)	% Change (2023-28)	% Occupation Group in Industry (2023)
Custom Computer Programming Services	48,746	58,665	20%	20%
Software Publishers	28,606	32,957	15%	12%

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2023)	Jobs in Industry (2028)	% Change (2023-28)	% Occupation Group in Industry (2023)
Computer Systems Design Services	22,272	22,721	2%	9%
Web Search Portals and All Other Information Services	18,783	20,039	7%	8%
Electronic Computer Manufacturing	15,191	17,639	16%	6%
Data Processing, Hosting, and Related Services	14,327	17,978	25%	6%
Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	7,984	8,755	10%	3%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	7,323	8,595	17%	3%
Corporate, Subsidiary, and Regional Managing Offices	6,777	6,556	-3%	3%
Research and Development in Biotechnology (except Nanobiotechnology)	4,041	4,998	24%	2%

Source: Lightcast 2024.4

Table 6. Top Employers Posting Artificial Intelligence Entrepreneurship Occupations in the Bay Region and the Silicon Valley Sub-Region

Employer	Bay	Employer	Silicon Valley
Apple	2,334	Apple	2,300
Amazon	1,953	Google	1,451
Google	1,607	Amazon	1,314
Meta	1,230	Nvidia	1,039
Nvidia	1,078	Tiktok	777
Walmart	787	Walmart	708

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Educational Supply

There is one community college in the Bay Region issuing 22 awards on average annually (last 3 years ending 2021 - 23) on TOP 0799.00 - Other Information Technology. In the Silicon Valley Sub-Region, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

There are two other CTE educational institutions in the Bay Region issuing 49 awards on average annually (last 3 years ending 2020-22) on CIP 11.0201 - Computer Programming/Programmer, General. There is one other CTE educational institution in the Silicon Valley Sub-Region issuing 7 awards on average annually (last 3 years) on this CIP code.

Table 7a. Community College Awards on TOP 0799.00 - Other Information Technology in the Bay Region

College	Subregion	Low unit Certificate	Total
Santa Rosa	North Bay	22	22
Total	-	22	22

Source: Data Mart

Note: The annual average for awards is 2020-21 to 2022-23.

Table 7b. Other CTE Institutions Awards on CIP 11.0201- Computer Programming/Programmer, General. in the Bay Region

College	Subregion	Bachelor's degree	Certificates of less than 1 year	Total
Dominican University of California	North Bay	42	0	42
University of Silicon Valley	Silicon Valley	6	1	7
Total	-	48	1	49

Source: Data Mart

Note: The annual average for awards is 2019-20 to 2021-22.

Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay Region with 21,049 annual openings for the Artificial Intelligence Entrepreneurship occupational cluster and 71 annual (3-year average) awards for an annual undersupply of 20,978 students. In the Silicon Valley Sub-Region, there is also a gap with 9,577 annual openings and 7 annual (3-year average) awards for an annual undersupply of 9,570 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0799.00 - Other Information Technology

Metric Outcomes	Bay All CTE Program	Evergreen Valley College All CTE Program	State 0799.00	Bay 0799.00	Silicon Valley 0799.00	Evergreen Valley College 0799.00
Students with a Job Closely Related to Their Field of Study	74%	73%	71%	75%	NA	NA
Median Annual Earnings for SWP Exiting Students	\$53,090	\$42,743	\$46,188	\$48,630	NA	NA
Median Change in Earnings for SWP Exiting Students	24%	26%	13%	19%	NA	NA
Exiting Students Who Attained the Living Wage	54%	35%	59%	47%	NA	NA

Source: Launchboard Strong Workforce Program Median of 2018 to 2021.

Skills, Certifications and Education

Table 9. Top Skills in Job Postings for Artificial Intelligence Entrepreneurship Occupations in the Bay Region

Skill	Posting	Skill	Posting
Computer Science	25,266	Artificial Intelligence	8,916
Python (Programming Language)	20,334	Algorithms	8,878
Software Engineering	19,011	Application Programming Interface (API)	8,746
Software Development	14,239	Debugging	8,464
Machine Learning	13,811	Data Analysis	8,256
Scalability	12,650	Automation	7,478
Java (Programming Language)	10,941	Data Science	7,236
SQL (Programming Language)	10,750	Agile Methodology	7,224
C++ (Programming Language)	9,768	JavaScript (Programming Language)	6,591
Amazon Web Services	8,951	Project Management	6,210

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Table 10. Certifications in Job Postings for Artificial Intelligence Entrepreneurship Occupations in the Bay Region

Certification	Posting	Certification	Posting
Salesforce Certification	246	Epic EMR Certification	145
Project Management Professional Certification	167	SAP Certification	127

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Table 11. Education Requirements for Artificial Intelligence Entrepreneurship Occupations in the Bay Region

Education Level	Job Postings	% of Total
High school or GED	1,201	2%
Associate degree	970	2%
Bachelor's degree & higher	56,420	96%

Source: Lightcast 2024.4; "Job Posting Analytics." Jan. 2024 - Dec. 2024

Note: 37% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCCO Data Mart and CTE Launchboard.

Sources

O*Net Online

Lightcast

CTE LaunchBoard www.calpassplus.org

Statewide CTE Outcomes Survey

Contacts

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