

# Analysis of Salary Situation and Factors Influencing Salary in the Intelligent Vehicle Perception Industry

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**Abstract:** This article explores the perception of intelligent automobile manufacturing in the Yangtze River Economic Belt urban agglomeration. Job information is crawled based on industry selected positions, and linear regression analysis is conducted on job salary and factors affecting salary. In the perception industry of intelligent vehicles, salaries in the lower reaches of the Yangtze River Economic Belt are significantly higher than those in the upper and middle reaches, while there is no significant difference between the upper and middle reaches. Joint venture, private, and joint-stock companies with a scale of over 500 employees have higher salaries. The highest salary in this industry is obtained with 5 and 10 years of work experience, with no significant difference between the two. At the same time, the industry attaches great importance to education, and higher education will result in a wider range of salaries.

**Keywords:** Linear regression, Yangtze River Economic Belt, Analysis of salary situation, Analysis of influencing factors.

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## 1. Research object and content

The research object of this article is the Yangtze River Economic Belt, which is divided into three major urban agglomerations: the upstream Chengdu Chongqing urban agglomeration, consisting of a total of 27 prefecture level cities; The urban agglomeration in the middle reaches of the Yangtze River, also known as the "Middle Triangle", includes 28 prefecture level cities; The downstream Yangtze River Delta urban agglomeration includes 16 prefecture level cities. It covers a total of 71 prefecture level administrative units. The Yangtze River Economic Belt runs through the eastern and western parts of China, reaching Shanghai in the east and Yunnan in the west, spanning the three major regions of eastern, central, and western China. Its geographical scope includes Chongqing, Sichuan, Yunnan, Guizhou, Jiangxi, Hubei, Hunan, Shanghai, Jiangsu, Zhejiang, and Anhui. It is not only the most prosperous and active economic region in the Yangtze River Basin, but also one of the most densely populated and rapidly developing economic corridors in the country. In addition, the Yangtze River Economic Belt occupies an important position in various fields such as the national economy, science and technology, and culture, and is one of the most advanced and prominent regions in these areas. In the mid-1980s, some scholars officially proposed the construction of the Yangtze River Economic Belt, utilizing the radiation effect and attraction of super cities and mega cities to closely connect surrounding cities and rural areas, thus forming an economic region.

The research content of this article is the salary situation and influencing factors in the perception industry of intelligent automobile manufacturing. The perception industry of intelligent automobile manufacturing is one of the core areas for the development of autonomous driving and intelligent connected vehicles, mainly focusing on obtaining environmental information around the vehicle through various sensor technologies, providing a data foundation for decision-making and control. Its technology, industrial chain, and application scenarios are rapidly evolving, becoming a key driving force for promoting the automotive intelligence revolution.

## 2. Journals Reviewed

Zhou Hanlin et al. (2024) constructed a linear regression model using P company as an example and found that education level, job rank, and length of employment significantly affect salary levels, providing empirical evidence for companies to optimize their salary systems [1]. Wang Zhuo et al. (2023) pointed out based on recruitment data that work experience, education, region, and skills (development and research abilities) are the core influencing factors of salary for data research and development positions, and there are significant differences in demand between regions. Chen Han and Wang Fengqin (2023) found that there is a contradiction between high expectations and low satisfaction in the teaching profession in China. They suggested reducing work intensity, improving treatment and professional development conditions to enhance attractiveness. Yu Wanlu and Zhang Sijie (2023) found that work experience, education, software skills mastered, company type, and location have a significant impact on the salary of data analysis positions. This study provides clear directions for job seekers to improve their skills. Guo Liqing et al. (2020) revealed the significant impact of work experience, city, education background and company size on the salary in the Internet industry. Research has shown that first tier cities and top companies offer higher salaries due to resource concentration, and the combination of work experience and skills has become the core driving force for salary growth.

## 3. Data Sources

The data source of this article is the job information crawled from the Yangtze River Economic Belt urban agglomeration by inputting some industry positions on the Zhilian Recruitment Platform. The selection of positions in this chapter is based on the perception industry in the intelligent automotive industry chain, as detailed in Table 1.

**Table 1.** Position Table

industry	industry	position
perception	radar sensor	Radar Algorithm Engineer
perception	radar sensor	Sensor Fusion Engineer
perception	radar sensor	Embedded Development Engineer
perception	High precision map	High precision map development engineer
perception	High precision map	GIs
perception	High precision map	Map data annotator

The information crawled for this position includes the highest and lowest salaries, educational requirements, experience requirements, company location, company size, and company category. The specific variable settings and data processing methods are shown in Table 2.

**Table 2.** Variable Selection and Data Processing

Variable type	Variable Name	detailed description	data processing
dependent variable	Average salary logarithm	Take the average of the lowest and highest salaries in the job information as the average salary	Take the logarithm of the average salary to reduce the impact of outliers.
independent variable	Educational requirements	The minimum educational requirement for recruitment information. There are a total of 7 levels, namely none, high school, vocational school, college, undergraduate, master's, and doctoral.	Create 6 dummy variables based on 'none'.
	Experience requirements	The minimum working years required by the company.	Create virtual variables based on the data values of 0, 1, 3, 5, and 10 in the recruitment information, with 0 as the baseline
	Company Region	There are three levels in total, namely the upstream, midstream, and downstream of the Yangtze River Economic Belt.	Create 2 dummy variables based on upstream.
	company size	There are 6 levels in total, namely less than 50 people, 50-150 people, 150-500 people, 500-1000 people, 1000-5000 people, and 5000-10000 people.	Create 5 dummy variables based on a benchmark of less than 50 people.
	Company Category	There are a total of 10 levels, including private companies, listed companies, foreign-funded enterprises, state-owned enterprises, joint ventures, public institutions, wholly foreign-owned enterprises, Hong Kong, Macao and Taiwan companies, joint-stock companies, and private enterprises.	Create 9 dummy variables based on state-owned enterprises.

## 4. Data Description

The experimental data in this chapter includes 6913 job information data based on the perception of innovative infrastructure. This dataset covers 11 provinces and 71 prefecture level cities in the Yangtze River Economic Belt. The data was collected in March 2025.

### 4.1. Analysis of Salary Situation and Influencing Factors in the Intelligent Vehicle Perception Industry

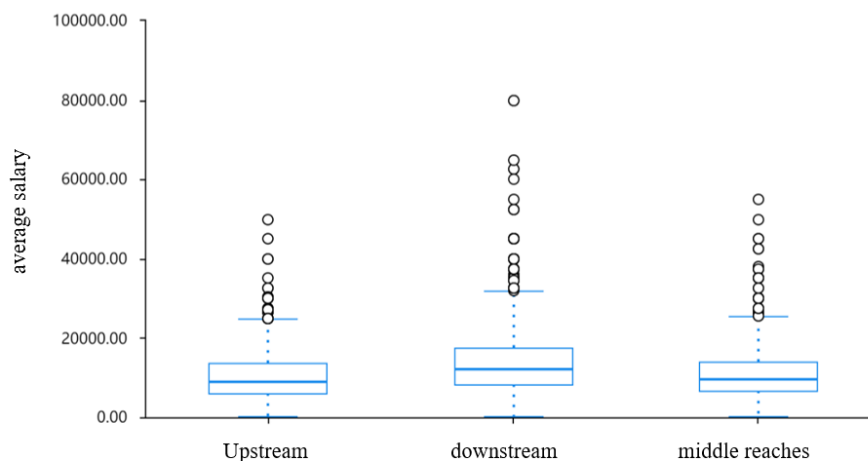
The linear regression analysis results of the salary in the intelligent car perception industry are shown in Table 3, where  $P=0.000$  indicates the effectiveness of the model.

**Table 3.** Linear Regression Analysis Results of Salary in the Intelligent Vehicle Perception Industry (n=6913)

	regression coefficient	95% CI	collinearity diagnosis	
			VIF	tolerance
constant	8.407**(134.956)	8.285 ~ 8.529	-	-
Industry scale: 5000 or more people	0.095* (2.195)	0.010 ~ 0.180	4.519	0.221
Industry scale: 500-1000 people	0.076 (1.535)	-0.021 ~ 0.172	2.519	0.397
Industry scale: 50-150 people	0.002 (0.055)	-0.081 ~ 0.086	4.385	0.228
Industry scale: 150-500 people	0.011 (0.260)	-0.072 ~ 0.094	4.741	0.211
Experience Requirement: 10.0	0.885** (6.302)	0.610 ~ 1.160	1.013	0.987
Experience Requirement 5.0	0.874** (24.231)	0.803 ~ 0.945	1.159	0.863
Experience Requirement 3.0	0.681** (28.251)	0.634 ~ 0.728	1.35	0.741
Experience Requirement 1.0	0.390** (17.031)	0.345 ~ 0.435	1.339	0.747
Educational Requirements _ High School	0.050 (0.491)	-0.150 ~ 0.250	1.028	0.972
Educational requirements _ Master's degree	0.800** (23.270)	0.733 ~ 0.868	1.355	0.738
Academic Qualifications Required - Undergraduate	0.307** (13.945)	0.264 ~ 0.350	1.464	0.683
Educational Qualifications Required _ None	0.180** (4.196)	0.096 ~ 0.264	1.251	0.799
Educational Requirements - Doctoral	1.531** (13.413)	1.307 ~ 1.755	1.036	0.965
Educational requirements _ Technical secondary school/Technical secondary school	-0.227* (-2.273)	-0.423 ~ -0.031	1.039	0.963
Location (Region) _ Midstream	-0.011 (-0.295)	-0.082 ~ 0.061	2.308	0.433
Location (Region) _ Downstream	0.154** (4.979)	0.094 ~ 0.215	2.324	0.43
Company Type_Shared Enterprise	0.134** (2.892)	0.043 ~ 0.225	2.182	0.458
Company Types_Hong Kong, Macau, and Taiwan Companies	0.179 (1.579)	-0.043 ~ 0.401	1.112	0.899
Type of Company: Private	0.076* (2.017)	0.002 ~ 0.149	4.06	0.246
Type of Company: Wholly Foreign Owned Enterprise	-0.027 (-0.396)	-0.161 ~ 0.107	1.351	0.74
Company Type_Joint Venture	0.195** (3.558)	0.088 ~ 0.303	1.676	0.597
Company Type_Public Institution	-0.920** (-14.649)	-1.043 ~ -0.797	1.448	0.691
Company Type_Listed Company	0.073 (1.611)	-0.016 ~ 0.162	2.388	0.419
sample size	6913			
R <sup>2</sup>	0.255			
Adjust R <sup>2</sup>	0.253			
F value	F (25, 6887)=94.402, p=0.000			

Note: Dependent variable=logarithm of average salary; D-W value=1.907; \*P<0.05 \*\* p<0.01 The t-value in parentheses

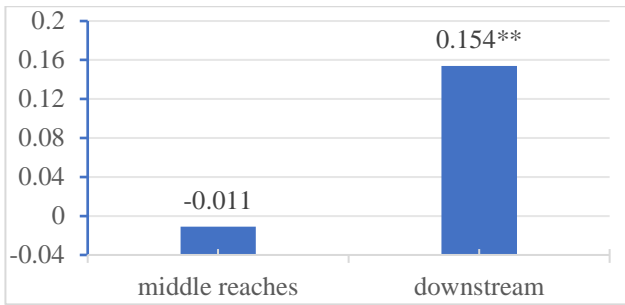
#### 4.1.1. Analysis of Salary Situation in the Intelligent Automotive Perception Industry



**Figure 1.** Regions and Average Salaries in the Intelligent Vehicle Perception Industry

Using the salary of the upper reaches of the Yangtze River Economic Belt urban agglomeration as a dummy variable, the experimental results are shown in Figures 1 and 2. The salary in the middle reaches is 1.1% lower than that in the upstream, but the salary gap between the upper and middle reaches is around 1%, and there is no significant difference. The average salary in the downstream is significantly higher than that in the upstream by 15.4% and higher than that in the midstream by 16.5%. There is a significant difference at the 0.05 level

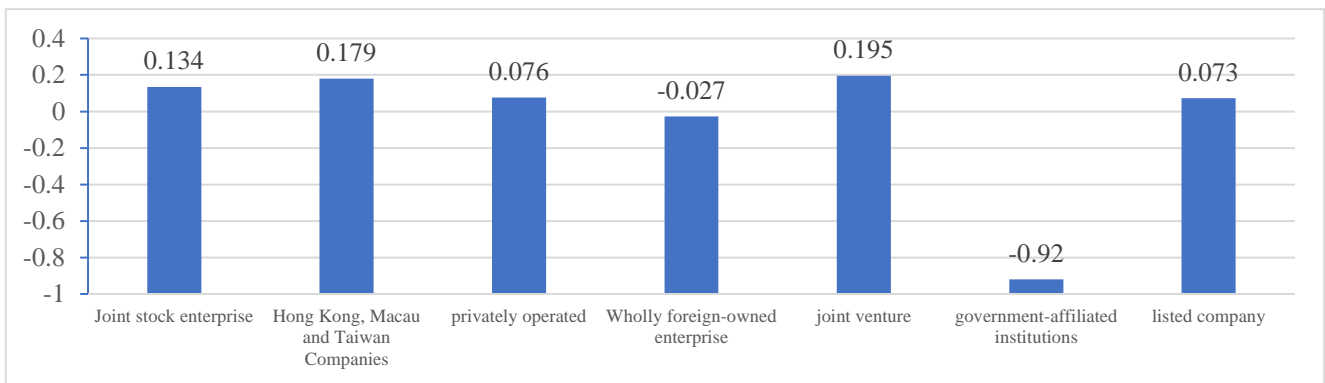
between downstream salaries and the urban clusters in the upper and middle reaches of the Yangtze River Economic Belt.



**Figure 2.** Analysis of Salary and Regional Distribution in the Intelligent Vehicle Perception Industry

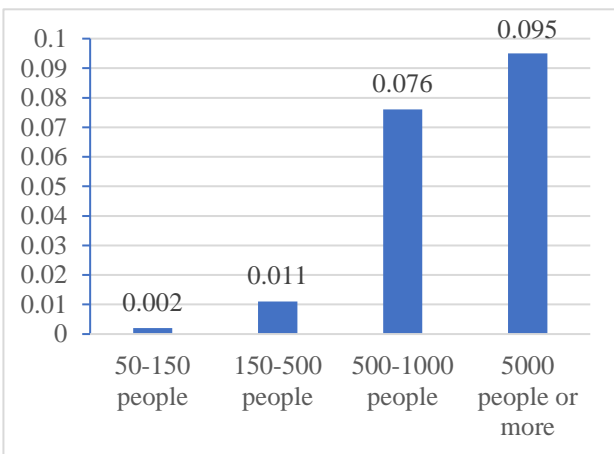
#### 4.1.2. Analysis of Salary and Company Types in the Intelligent Automotive Perception Industry

The experimental results are shown in Figure 3. In this experiment, state-owned enterprises were set as dummy variables and compared with other types of companies.



**Figure 3.** Analysis of Salary and Company Category in the Intelligent Vehicle Perception Industry

#### 4.1.3. Analysis of Salary and Company Size in the Intelligent Automotive Perception Industry



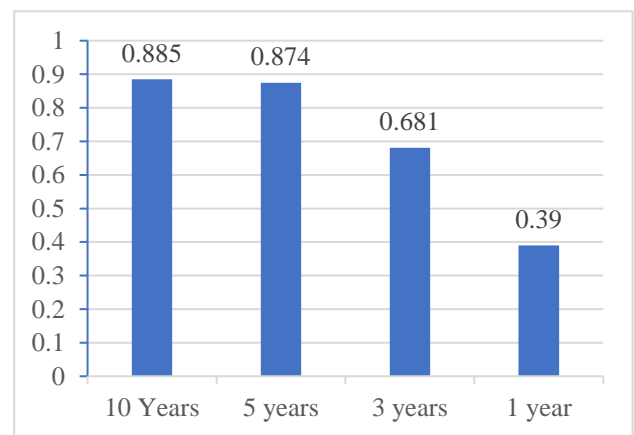
**Figure 4.** Analysis of Salary and Company Size in the Intelligent Vehicle Perception Industry

In this experiment, as shown in Figure 4, a dummy variable was set for companies with a size of less than 50 people. The experimental results show that the average salary of employees with a scale of less than 50, 50-150, and 150-500 shows a certain degree of step change, but the overall difference is about 1%, and there is no significant difference. The salary of companies with more than 5000 employees is significantly higher than that of companies with less than 500 employees, and is 9.5% higher than that of companies with less than 50 employees, with a significant difference below 0.1; Compared to companies with 50-150 employees, the salary is 9.3% higher, and compared to companies with 150-500 employees, the salary is 8.4% higher. The salary gap

According to the results, in the field of intelligent vehicle perception, the salaries of joint ventures, joint-stock enterprises, Hong Kong, Macao and Taiwan companies, and private enterprises are significantly higher than those of state-owned enterprises. At the same time, salaries in public institutions are significantly lower than those in state-owned enterprises. There is no significant difference in salary between foreign-owned enterprises, listed companies, and state-owned enterprises. The salaries of joint venture companies are 19.5% higher than those of state-owned enterprises, 13.4% higher than those of state-owned enterprises, and 7.6% higher than those of private enterprises, all of which have significant differences below 0.05. Joint venture companies have salaries 111.5% higher than public institutions, private enterprises have salaries 99.6% higher than public institutions, and joint-stock enterprises have salaries 105.4% higher than public institutions.

between companies with over 5000 employees and those with 500-1000 employees is around 2%, and there is no significant difference.

#### 4.1.4. Analysis of Salary and Work Experience in the Intelligent Automotive Perception Industry



**Figure 5.** Analysis of Salary and Work Experience in the Intelligent Vehicle Perception Industry

Set the job positions that do not require work experience as dummy variables in the recruitment information, and the experimental results are shown in Figure 5. There is a significant difference in salary between positions that require work experience of 1 year, 3 years, 5 years, and 10 years at a significant level of 0.1. The salary for positions requiring 10 years of experience is 88.5% higher than that for positions without experience; The salary for positions requiring 5 years of experience is 87.4% higher than that for positions requiring no experience, and the salary for positions requiring 3 years of experience is 68.1% higher than that for positions requiring

no experience; The salary for positions requiring one year of experience is 39% higher than that for positions without experience. The difference between positions with 10 years of experience and positions with 5 years of experience is 1%, and there is no significant difference. The salary increases in a tiered manner between positions with 10 years of experience, 5 years of experience, 3 years of experience, 1 year of experience, and positions without experience requirements. The maximum salary increases for one year of experience compared to an inexperienced position is 39%.

#### 4.1.5. Salary and educational requirements for the intelligent car perception industry

Comparing college education as a dummy variable, the

experimental results are shown in Figure 6. Undergraduate and above education levels are significantly higher than college education levels below the significance level of 0.05. The salary gap between high school education and college education is 5%, and there is no significant difference. And with higher educational requirements, the salary gap is gradually widening and becoming more pronounced. A bachelor's degree earns 30.7% more than a college degree, a master's degree earns 49.3% more than a bachelor's degree, and a doctoral degree earns 73.1% more than a master's degree.

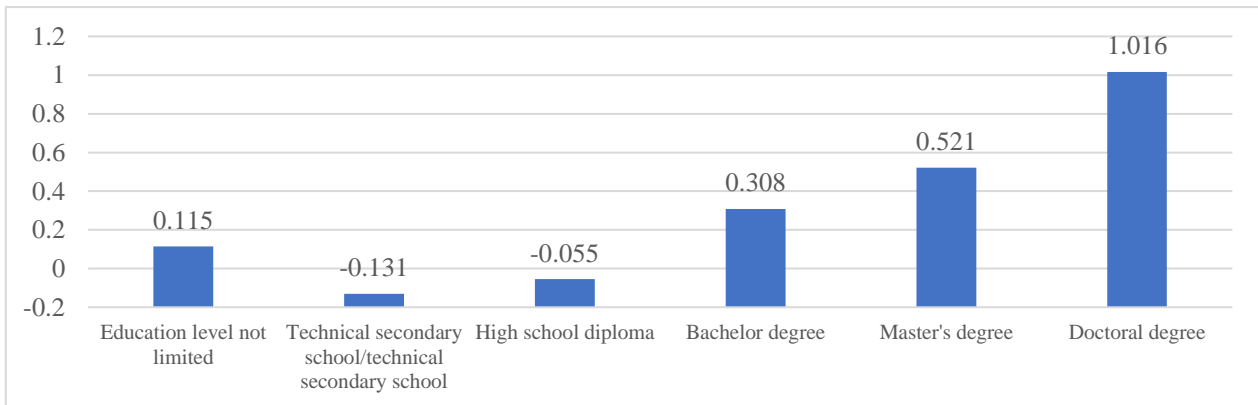


Figure 6. Average Salary and Educational Requirements in the Intelligent Vehicle Perception Industry

## 5. Conclusions and Recommendations

In summary, in the perception industry of intelligent vehicles, salaries in the lower reaches of the Yangtze River Economic Belt are significantly higher than those in the upper and middle reaches by more than 15%, while there is no significant difference between the upper and middle reaches. Joint venture, private, and joint-stock companies with a scale of over 500 employees have higher salaries, up to 19.5% higher than state-owned enterprises. 5 and 10 years of work experience earn the highest salary in this industry, exceeding the required salary for inexperienced positions by over 87%. At the same time, the industry attaches great importance to education, and higher education levels can lead to a wider salary range, with a maximum range of 73.1%. The largest salary gap between education levels is 175.8%. Based on the above analysis, this article provides the following suggestions:

(1) Encourage downstream leading enterprises to establish research and development centers or production bases in the middle and upper reaches of the Yangtze River, attract high-end talents through high salaries in the downstream, and promote the upgrading of the industrial chain in the middle and upper reaches through technology transfer. At the same time, tax reductions and exemptions will be granted to enterprises investing across regions, and land and infrastructure support will be provided.

(2) Encourage local governments in the middle and upper

reaches to establish intelligent automobile industry funds, with a focus on investing in private and joint ventures. Promote state-owned enterprises to introduce market-oriented salary mechanisms and narrow the salary gap with private enterprises.

(3) Targeted cultivation of highly experienced talents and establishment of a joint training mechanism for "industry university research application".

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