

## Interview and CV preparation

# Guide on Technical skills for Computer Science/ IT



### What are technical skills?

Technical skills are the specialized knowledge and expertise required to perform specific tasks and use specific tools and programs in real world situations. Diverse technical skills are required in just about every field and industry, from IT and business administration to health care and education.

In fact, many entry-level positions across industries require basic technical skills, such as cloud computing in Google Drive and navigating social media platforms. Examples of more advanced technical skills that a job might require include programming languages, technical writing, or data analysis.

Technical skills, sometimes referred to as hard skills, that your resume/cv should always show the practical knowledge you use in order to complete tasks.

This guide will help you with the technical skills companies are expecting to see listed on your resume/cv based on the career field you are applying for.



### What is the Computer Science career field?

Computer scientists deal mostly with software and software systems; this includes their theory, design, development, and application. Computer science majors study programming languages, discrete math, and database design to prepare for careers as software designers, network administrators, IT managers among others. Careers in computer science allow qualified individuals to pursue many different types of jobs.

Although knowing how to program is essential to the study of computer science, it is only one element of the field. Computer scientists design and analyze algorithms to solve programs and study the performance of computer hardware and software. The problems that computer scientists encounter range from the abstract – determining what problems can be solved with computers and the complexity of the algorithms that solve them – to the tangible – designing applications that perform well on handheld devices, that are easy to use, and that uphold security measures.



Within this career field we can find different roles you can work on, and each one has its own unique requirement you need to have included in your CV. Below you can find those listed for each role.

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### General skills needed

Firstly, let's have a look at some general skills useful in the Computer Science career field which you should include in your CV.

General hard skills:

- Established Math skills
- Excellent computer and technology knowledge and skills
- An ability to analyze problems and trace them to their core causes
- A systematic approach to work and problem solving
- A focus for accuracy
- A strong ability to anticipate and diagnose problems
- Ability to organize and classify large amounts of information
- Programming skills (various skills)

General soft skills:

- Attention to detail
- Creativity
- Time-management skills
- Analysis skills
- Teamwork and collaboration
- Problem-solving
- Critical thinking

Below, you will find some role specific skills

Career Field Role	Technical Skills often required	Additional
Data Analytics	Python, SQL, data wrangling, matplotlib, bootstrapping, Pandas & NumPy, statistics	
Data Science	Python, SQL & Statistics, machine learning, deep learning, software engineering	A Portfolio will be required
Data Engineering	Intermediate Python & SQL, data modeling, data pipelines, Data Lakes, Spark, Airflow	A Portfolio will be required
AI	Python, R, Java, C++, programming, Maths/statistics	
AR VR	C++, Java, C#, 3D Max, Autodesk 3D, video/sound production, UI/UX, game development	

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Career Field Role	Technical Skills often required	Additional
CyberSecurity/ IT Security	Threat assessment, security vulnerabilities, compliance, governance, risk, incident response, network connectivity and OS fundamentals, network defense, ethical hacking, computer forensics, incident response, reverse engineering, sysadmin skills on Windows, Macs, and Linux/Unix platforms, script and write code, computer networks, network components, server room hardware, software and services, technology and methodology	
Server & Network	Virus protection and eradication, HTML, CSS, Linux shell scripting, analytics and troubleshooting, firewalls and security, programming languages (i.e. Ruby, Python, Perl, etc. etc.), hardware and infrastructure	
Software Dev or Full-stack Dev	Object-oriented programming, ethereum blockchain, blockchain architecture, data auditing, Python, JavaScript, PostgreSQL, Flask, Docker, Kubernetes, CSS/HTML, Git, mathematical, Perl, Ruby, HTMP, C#, etc.	A Portfolio will be required
Game Development	Programming languages (C#, C++), APIs, video graphics, hardware, UX/UI design, VR & AR (optional)	A Portfolio will be required
Cloud Computing	AWS, microservices and kubernetes, configuration management with Ansible, CloudFormation, cloud infrastructure	
Front-end Development	HTML, CSS, JavaScript, Webpack, Node, Flexbox, object-oriented programming	A Portfolio will be required

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## Role Specific Skills

Career Field Role	Technical Skills often required	Additional
UX-UI	User research, user experience, design thinking, user interface design, usability testing	A Portfolio will be required
IT Business Analysis/Project Management/Product Management	Basic Python, Neural Networks, deeplearning, Jupyter Notebooks, CNNs, GANs,	
Software Testing/ Quality Assurance	Database, SQL, Linux commands, test management tools, defect tracking tool, automation tool	
Mobile Dev	XML layouts, Java programming, C#, Java, Objective-C, mathematical aptitude, UI designing, backend computing, web development languages (CSS, HTML 5, etc.)	A Portfolio will be required



## CV example

### Resume Sample (Computer Science, pre-career)

**Im A. Spartan**  
San Jose, CA 95192 | (408) 555-5555 | [imaspartan@gmail.com](mailto:imaspartan@gmail.com) | [linkedin/in/imaspartan](https://linkedin/in/imaspartan)

**OBJECTIVE:** Seeking internship in application development

**EDUCATION**  
B.S., Computer Science  
San Jose State University, San Jose, CA, GPA: 3.33

**RELATED COURSEWORK:** Programming in Java, C, and C++. Computer Graphics Algorithms, Data Structures and Algorithms, UNIX, Computer Architecture, Object-Oriented Programming, Computer Networks

**TECHNICAL SKILLS**  
Computer: C, C++, Java, SQL, HTML, Visual Basic, Perl  
Remote: Zoom, Google Meets, Slack, Discord

**PROJECT EXPERIENCE**  
**Network Game Development, SJJSU** Spring 20XX  
• Volunteered for lead role on a team of 3 in designing and developing network game in Java  
• Brainstormed ideas and delegated technical responsibilities and tasks to team members using weekly Discord meetings to ensure everyone stayed on task  
• Produced a fully-functioning web-based multi-player game and successfully presented team demonstration via Zoom to class of 35

**Programming in C** Fall 20XX  
• Independently wrote complex program for hangman game in C  
• Created interface for graphics and script components  
• Gained valuable knowledge and skills in using C for application software

**RELATED EXPERIENCE**  
**Network Support Administrator, New Age Computer Solutions, Fremont, CA** Aug 20XX - Present  
• Repair and debug hardware and software systems  
• Adapt company's software applications to work on remote access network and install extensive hardware to augment the system  
• Increased company's user-satisfaction rating by 20%

**QA Tester, Zaren Inc., Milpitas, CA** Jan 20XX - Aug 20XX  
• Tested and evaluated printer drivers and wrote reports on problems detected.  
• Collaborated with engineers in developing and designing test matrices.

**Inventory, Shipping, and Receiving Clerk, Globus Corporation, San Jose, CA** Jun 20XX - Dec 20XX  
• Generated reliable weekly and monthly reports on all products and materials in stock  
• Managed stockroom activities and provided updated inventory figures  
• Reduced inventory errors by 17% within 6 months

**ACTIVITIES**  
**President, SJSU Computer Science Club** Sep 20XX - Present  
**Volunteer Tutor, ABC for Kids** Sep 20XX - Present

### MACK CROLANGUAGE

844-555-2626 | [mackrol@gmail.com](mailto:mackrol@gmail.com)

**EDUCATION**  
**Carnegie Mellon University, Pittsburgh, PA**  
Master of Science, Computer Science, December 2015  
Selected Coursework: Introduction to Machine Learning (10-601, Fall 2014), Distributed Systems (15-440/640, Fall 2014), Algorithm Design and Analysis (15-451/651, Fall 2014), Web App Development (15-637, Spring 2015), Machine Learning with Large Datasets (10-605, Spring 2015), Graduate Artificial Intelligence (15-780, Spring 2015)

**Birla Institute of Technology and Science, Pilani, India**  
Bachelor of Engineering (Hons.), Computer Science (Minor: M.Sc. Economics), July 2014

**SKILLS**  
Programming/Scripting Languages : (Proficient) Java, (Familiar) Python, C, SQL, Javascript, MATLAB, Perl  
Frameworks and tools: Hadoop, Django, DKPro for NLP, Maven, Git

**EXPERIENCE**  
**Software Engineering Intern**  
**Yahoo! Inc., Sunnyvale, CA**, May - August, 2015  
• Interned with the user data team, which is part of cloud services at Yahoo!  
**Research Intern**  
**Ubiquitous Knowledge Processing Lab, TU Darmstadt, Germany**, January - June, 2014  
• Developed an application in Java using the DKPro library to automatically solve multiple choice reading comprehension questions. Using text similarity and textual entailment measures, it obtained the 2<sup>nd</sup> best score on CLEF Entrance Exams competition.

**Research Student**  
**Computer Engineering and Networks Laboratory, ETH Zurich, Switzerland**, July - December, 2013  
• Developed an application in Java to use a tree-based learning algorithm to model the deadline hit and miss patterns of periodic real-time tasks. The algorithm used formal verification techniques to generate a regular language-based guarantee to predict future deadline hits and misses.

**Developer (Google Summer of Code)**  
**Student Developer for National Resource for Network Biology (NRNB)**, Summer 2012  
• Built an app in Java for Cytoscape, an open-source software for complex network visualization. The app helped users to visually analyze and modify molecular interaction networks.

**PROJECTS**  
**MapReduce Engine**  
**Carnegie Mellon University**, Fall 2014  
• Implemented a Hadoop-like MapReduce facility, with master and worker nodes for map-reduce operations over large datasets, with a distributed file system, and fault tolerance to address data-node failures.

**Object Recognition Using CIFAR-10 Dataset**  
**Carnegie Mellon University**, Fall 2014  
• As part of an in-class Kaggle competition, several approaches were tried to train a model using 4000 images for the CIFAR-10 dataset. With GIST descriptors and a Kemelized (RBF) SVM, a test accuracy of 61% was obtained on a dataset consisting of 15000 images.

**Intelligent Indoor Emergency Response System**  
**Carnegie Mellon University**, Spring 2015  
• Developed a priority-based auctioning algorithm for task allocation in a multi-agent environment. Using a modified A\* algorithm, tasks were prioritized based on proximity to the location of the fire resulting in an efficient evacuation.

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### Steps to take for interview prep

1. Refresh your fundamentals
2. Research the company to gain an understanding of their preferred coding language etc
3. Prepare technical and soft skill interview questions and answers
4. Have an understanding company culture
5. Prepare a portfolio to demonstrate any previous work or skills
6. Be aware of your strengths and areas of improvement and have an idea of how you will improve in these areas.

### Questions which are helpful to prepare

There would be a mix of standard behavioral questions and technical questions to assess your skills and where you would be most utilized within the company during your internship.

- What are your preferred programming languages and why?
- What is a class? What is a super-class?
- What is a default constructor? What is a conversion constructor?
- What is the difference between C and C++? Would you prefer to use one over the other?
- What is SDLC?
- What is an array?
- What is artificial intelligence?
- What is machine learning?
- What is the difference between overriding and overloading?
- What is a character stream?
- What is a file?
- What is an operating system? What are the popular operating systems used today?
- What is primary and secondary memory?
- What are the commonly used computer processors?
- What is a constructor?
- What is an interface?
- How do you stay current with the latest technology?
- Describe a time you had to work on a team and something didn't go well. What would you do differently?

***Remember, that this is an internship, and if there are things you are unsure of – that is completely okay! This is a learning experience and your supervisor is there to support you. Be sure to be honest and transparent regarding your skills and capabilities.***