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Amazon & Applied Scientist Overview

Amazon.com, Inc. (“Amazon”) is a U.S. multinational technology company known for its leadership in e-commerce and cloud computing [1]. It was founded in 1994 by Jeff Bezos and has since expanded into areas like digital streaming, AI, and online advertising [1]. Amazon organizes its science roles into Data Scientists, Applied Scientists (AS), and Research Scientists. Applied Scientists at Amazon use machine learning (ML) and statistical techniques to solve real-world business problems, build and evaluate scalable models, and work closely with software teams to put those models into production [2] [3]. For example, the Applied Scientist (India) role (Job ID 2992116) is on the “Machine Learning and Data Sciences team for India Consumer Businesses,” focusing on analyzing terabytes of data and delivering ML solutions that optimize millions of customer interactions [3]. (This team-oriented, hands-on focus on ML model building distinguishes Applied Scientists from pure software engineers or theoretical researchers.)

Typical Interview Process

Amazon’s hiring process typically spans 2–3 weeks and follows a standard sequence: resume screening, one or two technical phone screens (60 min each), and an on-site (or virtual on-site) interview loop of 5–6 rounds (45–60 min each) [4]. Recruiters first review your resume to match it to the AS role; strong academic projects, publications, and relevant internships can help get past this stage. (In fact, about 22% of successful Amazon candidates report using employee referrals to secure interviews [5].)

The technical phone screens (often over Amazon Chime) mix behavioral and domain questions [6]. Typically you’ll discuss one of your past ML projects in depth (“science depth”) and answer general ML/statistics questions (“science breadth”), along with a few Leadership Principle (LP) behavioral questions [7] [8]. Some teams may also include one or two medium-level coding problems (e.g. LeetCode-style array or string problems) in the phone screen [9] [10]. If you pass the phone stage, you move to the on-site/loop interviews.

During the interview loop, candidates typically face 5–6 one-hour sessions with team members (including peers, a manager, and a Bar Raiser). These sessions combine technical and behavioral questions. Many candidates report that *over half* of each interview’s questions probe Amazon’s Leadership Principles, even during technical rounds [11] [12]. The technical content is usually a deeper version of the phone screen. For example, candidates describe rounds for **ML depth** (discussing one of their projects in detail) and **ML breadth** (general ML/algorithms concepts, e.g. comparing bagging vs boosting or explaining dropout) [13] [14]. Other rounds focus on **ML application** or system design (open-ended problems like designing a book recommendation system or modeling how to send marketing emails via ML [15] [16]), and a **coding round** (typically 1–2 medium DSA problems on arrays, trees, graphs, etc. with emphasis on clean code) [17] [18]. Candidates often note the intensity: one said the loop was “very intense and draining” and suggested splitting it over two days if possible [19]. After all interviews, a debrief is held, and Amazon’s “2&5” promise means you should get a decision email within ~2 business days of a phone screen and ~5 days of the loop [20]. (In practice, some candidates report longer waits, especially if recruiters or interview schedules change.)

Candidate Interview Experiences

Several candidates have shared detailed Amazon AS interview stories. Key examples include:

- **Reddit – "A Bittersweet Journey" (Applied Scientist II)** [21] [22]. This candidate went through **7 rounds** (2 phone, 5 onsite) for an AS II (L5) role. Their first phone focused on ML fundamentals (stats, probability, DSA). Onsite rounds included *ML breadth* (e.g. explain KNN, decision trees), *ML depth* (questions on their resume projects), a *business problem* round (design an Alexa-like ML system), a full **1.5-hour behavioral interview** (Leadership Principles), and a *coding* round (e.g. topological sort "Course Schedule" and longest duplicate substring). They ultimately **received an Applied Scientist I (L4) offer**. Their advice: expect a heavy mix of ML theory and coding, plus thorough LP questions [21] [22].

- **GeeksforGeeks – Campus Hire (Amazon Ads)** [23] [24]. An Indian student (senior year undergrad) recounted Amazon Ads recruiting on campus. After CV screening, he faced a loop of *five rounds*: (1) **Coding+Resume** (DSA problems like "largest substring in lexicographic order" and "reverse K-size linked list"), (2) **ML Breadth** (general ML questions on decision trees, random forests, dropout, K-means, etc.), (3) **ML Depth** (details of projects and core ML concepts), (4) **Scalable ML** (distributed/Big Data aspects of ML), (5) **Managerial/Behavioral** (LP-based questions). He cleared rounds 1–2 but was rejected after ML breadth. His takeaway: "You need both breadth and depth in ML, and be ready for leadership-principle questions in every round" [24]. He also noted first-round coding was moderate (strings, linked lists) and second-round ML queries were deep (e.g. clustering algorithms, dropout usage) [25] [26].

- **Medium – Chaitanya Mundle (Applied Scientist II, AWS Ads)** [27] [28]. A Mid-career applicant (hired Jan 2025) described Amazon Ads' process. They had one phone screen then five on-site interviews (~60 min each) over ~3 weeks. The rounds were: (a) **ML Breadth** (supervised/unsupervised topics, regularization, optimization) [29], (b) **ML Depth** (deep dive on their resume and questions on Generative AI), (c) **Coding** (array/hash problems in Python; e.g. two-pointer techniques) [28], (d) **Tech Talk (ML system design)** (e.g. designing a brand-safety ad recommendation system) [30], and (e) **Leadership Principles** (behavioral STAR questions) [31]. Despite six strong rounds, they were rejected. Key advice: know fundamental ML topics (even beyond your niche), practice storytelling on projects, and be ready to design ML solutions end-to-end [27] [31].

- **Reddit – KomisarRus (Applied Scientist I, got offer)** [10] [11]. A PhD-educated ML scientist recounted an on-site that emphasized Amazon LPs. After a phone screen (favorite ML paper discussion, coding an optimization algorithm, and three LP questions [10]), they had five one-hour on-site rounds. Remarkably, each round was **≥50% behavioral** [11]. Rounds included ML breadth (linear regression, KNN), a bar-raiser interview (mostly LP/deep questions), a coding round (string problem; 3 LP questions as well), another ML-oriented round (ensemble methods, NLP examples), and a *science application* case study (design an ML pipeline, including data collection and A/B testing) [32] [33]. This candidate **received an L4 offer**. Their preparation tips: sharpen coding via Amazon-tagged LeetCode, review ML fundamentals (and recent trends like Transformers) [34] [35], and have many LP-based stories ready. They also stress always thinking out loud, stating assumptions, and structuring answers clearly [10] [35].

- **LinkedIn – Arnav Gupta (Applied Scientist Intern)** [36] [37]. An undergraduate who placed in Amazon's ML Challenge shared his intern interview. He did an online assessment (2 coding problems: one dynamic programming, one two-pointer array task) [36]. Then a DSA interview

(graph BFS/DFS problem; tree recursion problem) [38]. Though he wasn't selected in Round 2, he noted feedback and held a third round focused on ML fundamentals (model evaluation, overfitting) and his past projects [37]. His advice: *DSA practice is non-negotiable*, and even as an intern candidate, Amazon tested graph/tree algorithms and ML basics.

- **Medium – Mrutyunjay Biswal (Freshman Applied Scientist, Intern track)** [39] [40]. An electronics engineering senior (2021) detailed an entry-level Amazon Ads interview. Despite being a mere undergrad, he secured interviews by proactively reaching out. He emphasized that Amazon expects **breadth and depth in ML fundamentals** even for freshers [41]. His rounds began with discussion of his NLP internship project, then 20+ rapid-fire ML theory questions: LSTM/RNN vs GRU, attention mechanisms, Word2Vec, CNN architectures, BatchNorm, Dropout, regularization (L1 vs L2), Adam optimizer, decision trees (entropy, Gini), and scenario questions (e.g. framing a classification ML problem) [40] [42]. His key message: thorough mastery of basic ML/statistics is crucial, and "a fresher can break in too" with strong fundamentals [41] [43].

- **Reddit – "Nonamexxpp" (Amazon Applied Science Intern)** [44] [45]. This candidate cold-applied and got an online assessment of two easy/medium coding problems (dictionary and two-pointer tasks) and a brief personality test [44]. After passing, they had *two one-hour interviews* (half behavioral LP questions and half technical). Technical questions were **highly tailored to the team's project** (which involved Transformers/NLP). Examples: "How would you constrain the embedding space of a language model?", "What are benefits of multi-head attention?", "How handle non-uniform missing data?" [45]. They emphasize using your project knowledge: "look up the specific project and study the topics they work on" [46]. For LPs, they advise preparing concrete STAR examples (e.g. "a time you went beyond a stakeholder's request", "handled supervisor disagreements") [47]. Ultimately they didn't get that role but joined another team via "alternate match" (which is a common process in ML internships).

Each of these firsthand accounts aligns on key points: Amazon's AS interviews mix ML fundamentals, coding, and LP questions; breadth-and-depth in machine learning is expected; and clear, structured answers (using STAR or similar) are crucial. As one candidate put it, even if an interview does not go perfectly, perform strongly in later rounds – each session **matters** [48] [12].

Sample Interview Questions

Behavioral / Leadership: Interviewers emphasize Amazon's 16 Leadership Principles through questions like: "Why Amazon?" or "Tell me about yourself" (customer obsession, intro) [49]. Other common prompts (each mapping to an LP) include: "Describe an innovative feature you built." (Invent & Simplify) [50]; "What's a project you're proud of?" (Think Big) [51]; "Tell me about a time you expanded a project's scope." (Think Big) [51]; "How did you handle an unexpectedly tight deadline?" (Bias for Action) [52]; "Give an example of a conflict with a colleague and how you resolved it." (Have Backbone / Disagree & Commit) [53]. Also: "Why did you choose a particular ML approach in a project?" or "Describe a time you delivered results under pressure." These are STAR-based questions that probe ownership, invention, customer focus, etc.

Machine Learning & Statistics: Questions test both theory and applied thinking. Examples include:
- *Supervised vs Unsupervised:* "What are the differences between supervised, unsupervised, and reinforcement learning?" [54].
- *Regression:* "What is linear regression? What is the closed-form solution vs. gradient descent?" [54]. "Explain logistic regression. How do L1 and L2 regularization differ in it?" [54].
- *Ensembles:* "How do ensemble methods like bagging and boosting work?" [55]. "What is the bias-

variance trade-off in ML?" [55].
- *Deep Learning:* "Explain how a Convolutional Neural Network (CNN) works." [56]. "What is the attention mechanism in neural networks? How do Transformers use it?" [56] [57]. "How do LSTM/GRU networks help with sequence data and vanishing gradients?" [58]. "What are common regularization methods in deep nets?" (e.g. Dropout, BatchNorm, etc. [56].) "Why use ReLU activation? What if a network had no hidden layers?" [56].
- *Optimization:* "Explain gradient descent and batch normalization. How can you accelerate or parallelize training?" [59]. "What is cross-validation? Why do it?" [60]. "Define overfitting and how to detect/mitigate it (early stopping, regularization) [61]. "What is the Curse of Dimensionality?" [62]. "How would you improve the performance of an existing ML model?" (discuss feature engineering, hyperparameters) [63].
- *NLP/Vision:* "What is Word2Vec or BERT? How are they trained?" [49] [56]. "Explain a U-Net or ResNet architecture, or object detection." [56]. "How does beam search decoding work for an LLM?" (e.g. for text generation) [64].
- *Applied ML problems:* "How would you build a recommendation system for books?" [65]. "If Amazon wants to send marketing emails to customers, how would you model/predict who to send them to?" [66]. "Model a warehouse inventory forecasting problem with ML." [67]. "Propose ML approaches for an A/B testing or fraud detection scenario." [68] [69].

Coding / Algorithms: Expect 1–2 medium problems per coding round, typically on arrays, strings, trees, or graphs. Example questions reported include:
- "Divide two integers without using multiplication, division, or modulo" [70].
- "Given a sorted array where every element appears twice except one, find the unique element" [70].
- "Given a course-prerequisite graph (2D matrix), detect if you can finish all courses" (topological sort problem).
- "Find the longest duplicate substring in a string."
- "Given an M×N grid with obstacles, find a path from top-left to bottom-right." [71].
- "Count the number of connected components in an undirected graph." [72].
- "Traverse or find a path in a dynamically updating graph." [71].

Statistics / Probability: While fewer, some interviews include stats questions. Sample questions:
- "How would you design an A/B test for a new feature? What metrics and sample size would you use?" [69].
- "What is a p-value? How would you interpret it in an A/B experiment?" [69].
- "Explain Maximum Likelihood Estimation (MLE). How does it differ from Bayesian inference?" [73].
- "What statistical methods (e.g. hypothesis tests) have you used in past projects and why?" [69].

Preparation Tips and Insights

- **Brush up fundamentals:** Review core ML topics (regression, trees, clustering, neural networks) and current trends (transformers, LLM basics, optimization algorithms). Interview guides emphasize breadth: even ads/fraud teams want familiarity with things like Transformers and regularization [35] [74]. Cover statistics basics (cross-validation, metrics, A/B testing) too [69]. If you have publications or projects, re-read them and be ready to discuss all design decisions [75] [49].

- **Coding practice:** Solve many medium LeetCode problems, especially Amazon-tagged ones. One candidate solved ~120 problems and focused on easy/medium array/string/two-pointer problems [34]. Use a whiteboard or shared doc to simulate writing syntactically correct code. In

coding rounds, always **talk through your thinking** – explain your approach and ask clarifying questions [76] [10].

- **Behavioral/STAR prep:** Memorize Amazon's 16 Leadership Principles and have 2–3 specific examples ("stories") for each. Structure answers with the STAR (Situation-Task-Action-Result) or SPSIL (Situation-Problem-Solution-Impact-Lessons) framework [77]. One common pitfall is spending too long setting up; practice summarizing the situation in ~30 seconds [78]. Always explicitly mention which principle each story showcases. As one candidate noted, interviewers often ask multiple LP questions each round [79] [32], so weave principles into technical answers as well. Be honest about any gaps (it's better to say "I don't know" than give a wrong guess) [10] [80].

- **Ask clarifying questions:** Whether it's a coding problem or system design, clarify requirements and constraints upfront. Interviewers expect you to make assumptions, but always state and confirm them [76]. Demonstrating this thoughtfulness is important.

- **System design / ML design:** For open-ended problems (e.g. "design Alexa's ML pipeline"), outline multiple approaches. Amazon values "thinking big": propose creative solutions and then narrow down to practical trade-offs [81]. Talk about data sources, model choices, evaluation metrics, and how you'd validate performance (A/B tests etc). In one review, the "science application" round was explicitly about laying out data collection, batching vs real-time, and testing [82].

- **Interview logistics:** Treat each round seriously (one candidate said even after a rough first round, later rounds improved dramatically [48]). Use any recruiter prep calls to ask what topics to expect. If given a tech talk opportunity, prepare to discuss a project or paper in depth. Finally, note Amazon's timelines: they often ask you to wait ~5 days, but if you hear nothing, it's fine to gently follow up. Networking internally (referrals) and a stellar resume can help you land the interview in the first place [5].

By combining solid technical review, LeetCode coding practice, clear communication (STAR stories), and familiarity with Amazon's leadership culture, candidates can maximize their chances. As one interviewee concluded: with "sheer determination and dedication," even a fresher can succeed [41].

Sources: This report synthesizes multiple public interview accounts and guides (e.g. Glassdoor, Reddit, Medium, IGotAnOffer) to present a comprehensive view of Amazon Applied Scientist interviews [10] [83] [49] [84] [69]. All quoted experiences and questions come from these published sources.

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