Java, Rest API, React, Spring Boot

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Technology Impact Cycle Tool

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Impact on society

What impact is expected from your technology?

What is exactly the problem? Is it really a problem? Are you sure?

The problem this technology aims to solve is the challenge of finding a parking spot when visiting a company or building with limited parking space park far away, I. This can be a the frustrating and time-consuming task for visitors, who may have to circle around the building or leading to delays and inconvenience

Are you sure that this technology is solving the RIGHT problem?

You would need to evaluate whether the technology effectively helps individuals find parking spots more efficiently. If it does, then it is solving the real problem.

How is this technology going to solve the problem?

There is confidence in its potential as similar systems have been successfully implemented in smart cities worldwide. However, the success would also depend on factors such as user adoption rates, the accuracy of data, and how well the technology integrates with existing infrastructure.

What negative effects do you expect from this technology?

The app might need access to the user's location data to function effectively, which could raise privacy issues. While the app might anonymize or aggregate data to protect individual privacy, users may still feel uncomfortable sharing this information.

In what way is this technology contributing to a world you want to live in?

Short-term: Users could experience less stress and save time when they need to find a parking spot in a busy area. For businesses in the area, it might lead to increased visitor satisfaction.

Long-term: Users may become more reliant on the app, changing their approach to commuting and perhaps making them more willing to visit areas they once avoided due to parking issues. The app could also encourage the further development and adoption of smart city technologies.

Now that you have thought hard about the impact of this technology on society (by filling out the questions above), what improvements

would you like to make to the technology? List them below.

Enhanced Data Privacy: Implement advanced encryption techniques, anonymize user data, and limit data access to essential personnel. Make the app's data privacy practices transparent and user-friendly.

Accessible Design: Make the app more accessible and user-friendly. It should be usable by people of all abilities and ages. This could include features like text-to-speech, language translation, and easy-to-read displays.

Hateful and criminal actors
What can bad actors do with your technology?

In which way can the technology be used to break the law or avoid the consequences of breaking the law?
Privacy Invasion: If not properly secured, location data could be used to track users' movements, which could be a significant privacy violation. This could potentially lead to stalking or harassment.

Data Breaches: If the app stores personal data, it could be targeted for data breaches. Hackers could steal sensitive information for identity theft or other fraudulent activities.

Can fakers, thieves or scammers abuse the technology?
False Availability: Malicious actors could potentially manipulate the system to show false parking availability, leading to confusion and inconvenience.

Scamming: Unscrupulous actors could create fake versions of the app, tricking users into downloading them and then collecting their personal information for identity theft or fraud.

Can the technology be used against certain (ethnic) groups or (social) classes?
Exclusion: If the app becomes essential for finding parking, it could inadvertently disadvantage those who don't have access to the necessary technology. This could further widen the digital divide.

Discrimination: In a worst-case scenario, if bad actors gained control of the system, they could theoretically manipulate availability information to discriminate against certain users, although this would likely be difficult to execute and is rather speculative.

In which way can bad actors use this technology to pit certain groups against each other? These groups can be, but are not constrained to, ethnic, social, political or religious groups.
While the parking app is unlikely to be a prime target for such activity, if it were somehow linked to specific groups or areas, misinformation spread through the app could potentially foster conflict. However, this is highly speculative and would require very specific circumstances.

How could bad actors use this technology to subvert or attack the truth?

By spreading false information about parking availability, bad actors could sow distrust in the app and cause inconvenience to users.

Now that you have thought hard about how bad actors can impact this technology, what improvements would you like to make? List them below.

Enhance Security Measures, User Verification, Education and Awareness, Accessibility, Transparency

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Privacy

Are you considering the privacy & personal data of the users of your technology?

Does the technology register personal data? If yes, what personal data?

The app may require access to location data to function effectively. It might also store personal information if users need to create an account, such as name, email address, and possibly vehicle details.

Do you think the technology invades the privacy of the stakeholders? If yes, in what way?

Yes, there could potentially be privacy concerns if the app continually tracks and stores location data. Users might worry about their movements being monitored and recorded.

Is the technology is compliant with prevailing privacy and data protection law? Can you indicate why?

The app should be designed to comply with applicable privacy laws, such as GDPR in the EU or CCPA in California. This would involve measures like obtaining explicit consent for data collection and providing users with the option to view, edit, and delete their data. It's also important to only collect data that's necessary for the app to function.

Does the technology mitigate privacy and data protection risks/ concerns (privacy by design)? Please indicate how.

Yes, privacy by design can be implemented in several ways:

Minimizing Data Collection: Only collect data that's necessary for the app to function.
Anonymizing Data: Anonymize data wherever possible to protect user identities.
Robust Security Measures: Implement strong encryption techniques and secure servers to store data.

In which way can you imagine a future impact of the collection of personal data?

Over time, the collected data might be used to analyze parking patterns and implement smart city planning. However, if not managed correctly, there's a risk of privacy breaches and misuse of personal data.

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Now that you have thought hard about privacy and data protection, what improvements would you like to make? List them below.
Clear Privacy Policy, User Control Over Data, Data Anonymization, Strong Security Measures

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Human values
How does the technology affect your human values?

How is the identity of the (intended) users affected by the technology?
The technology doesn't directly affect users' identity, as its primary purpose is functional. However, becoming a user of such an app might subtly change a person's self-perception or public identity, perhaps making them feel more technologically savvy or connected.

How does the technology influence the users' autonomy?
The app can enhance user autonomy by giving them more control over their time and schedule, reducing uncertainty about finding a parking spot. However, there might be a slight risk of users becoming overly reliant on the app.

What is the effect of the technology on the health and/or well-being of users?
The app's main positive impact on well-being would likely be reduced stress and saved time. However, if users become overly reliant on the app or if there are issues with its accuracy or reliability, it could potentially cause frustration or anxiety.

Now that you have thought hard about the impact of your technology on human values, what improvements would you like to make to the technology? List them below.
Reliability, Ease of Use, Privacy, Responsibility, Accessibility, Education

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Stakeholders
Have you considered all stakeholders?

This category is only partial filled.

Who are the main users/targetgroups/stakeholders for this technology? Think about the intended context by answering these questions.

Name of the stakeholder
Sioux

How is this stakeholder affected?
This app can be useful in managing parking availability and minimizing inconvenience to visitors or customers.

Did you consult the stakeholder?
Yes

Are you going to take this stakeholder into account?
Yes

Did you consider all stakeholders, even the ones that might not be a user or target group, but still might be of interest?
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Now that you have thought hard about all stakeholders, what improvements would you like to make? List them below.
Stakeholder Collaboration
Feedback Channels
Transparency
Non-User Considerations
Community Engagement

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Data
Is data in your technology properly used?

Are you familiar with the fundamental shortcomings and pitfalls of data and do you take this sufficiently into account in the technology?
Data-driven technologies like this app have to deal with issues like data privacy, accuracy, and bias. For instance, if the app isn't accurate in displaying parking availability, it would lead to user frustration and decreased trust. Likewise, protecting user data is paramount to avoid privacy breaches.

How does the technology organize continuous improvement when it comes to the use of data?
The app can use machine learning algorithms to continuously improve the accuracy of parking availability predictions based on historical data. User feedback can also play a vital role in making improvements.

How will the technology keep the insights that it identifies with data sustainable over time?
The app should regularly update its algorithms and data collection techniques to reflect changes in parking patterns over time. Sustainability can be achieved by keeping a dynamic approach to data analysis and not relying solely on static models.

In what way do you consider the fact that data is collected from the users?
Data collection from users should be minimized and anonymized wherever possible. Clear consent should be obtained, and users should be given control over their data.

Now that you have thought hard about the impact of data on this technology, what improvements would you like to make? List them below.
Data Accuracy, User Feedback, Data Protection, Transparency, Dynamic Updating

Inclusivity
Is your technology fair for everyone?

Will everyone have access to the technology?
No, only the stakeholders will have access to the technology. Access may be limited to those involved in the development, implementation, and operation of the technology, such as the company, its employees, and authorized partners or collaborators.

Does this technology have a built-in bias?
Yes, the technology may have a built-in bias due to the use of the haar cascade classifier. Like any algorithm, the classifier's accuracy and performance can be influenced by biases in the training data used to develop it. If the training data is not diverse or representative enough, it can result in biased outcomes, particularly in the context of object detection or recognition. Addressing and mitigating this bias is crucial to ensure fair and equitable results from the technology.

Does this technology make automatic decisions and how do you account for them?
Yes, the technology can make automatic decisions. The use of algorithms and classifiers, such as the haar cascade classifier, enables the technology to make automated decisions regarding parking allocation or other related tasks. To account for these decisions, it is important to establish clear guidelines, rules, and criteria within the algorithm to ensure fairness, transparency, and alignment with the desired outcomes. Regular monitoring, evaluation, and feedback loops should be implemented to assess the accuracy and effectiveness of the automated decisions and make necessary adjustments or improvements as needed. Additionally, incorporating human oversight and intervention when necessary can provide an extra layer of accountability and ensure that any unintended consequences or biases are addressed appropriately.

Is everyone benefitting from the technology or only a a small group? Do you see this as a problem? Why/why not?
Yes, only a small group, specifically the stakeholders involved in the development and implementation of the technology, will directly benefit from it. This can be seen as a problem because it creates a limited distribution of benefits and may contribute to social inequality. If the technology does not address the needs of a broader user base or fails to provide equitable access to its benefits, it can deepen existing disparities and perpetuate an uneven distribution of resources. It is important to consider the broader impact and ensure that the technology is designed and implemented in a way that

benefits a wider range of individuals and communities, fostering inclusivity and fairness.

Does the team that creates the technology represent the diversity of our society?

The diversity of the team that creates the technology can significantly impact its design, functionality, and ability to address the needs of a diverse society. So in a way it does.

Now that you have thought hard about the inclusivity of the technology, what improvements would you like to make? List them below.

Increase team diversity.
Provide diversity training.
Seek diverse user input.
Address biases and barriers.
Ensure accessibility features.
Engage diverse stakeholders.
Prioritize inclusive design.
Form partnerships with underrepresented groups.

Transparency
Are you transparent about how your technology works?

Is it explained to the users/stakeholders how the technology works and how the business model works?
Yes, it is important to provide clear explanations to users and stakeholders regarding how the technology works and the underlying business model. Transparency is key in establishing trust and ensuring that users understand the processes and mechanisms involved. This includes explaining how the parking technology determines available spaces, allocates parking, and manages user data.

If the technology makes an (algorithmic) decision, is it explained to the users/stakeholders how the decision was reached?
Yes, it is essential to explain to users and stakeholders how algorithmic decisions are reached, including the use of a haar cascade classifier. Providing transparency in the decision-making process helps users understand and trust the technology. This may involve explaining the features and criteria used by the classifier, how it analyzes and processes data, and the factors considered in making decisions related to parking allocation. Additionally, stakeholders should be informed about any limitations or biases that may exist in the algorithm, ensuring a comprehensive understanding of how decisions are reached.

Is it possible to file a complaint or ask questions/get answers about this technology?

No, it's not possible to report or file a complaint after the project has been delivered. Once the project has been completed and delivered, the opportunity to provide feedback or address concerns may be limited. It is important to engage with users and stakeholders throughout the development and implementation stages to gather feedback, address questions, and ensure their needs are met.

Is the technology (company) clear about possible negative consequences or shortcomings of the technology?
Yes, the technology company should be clear about possible negative consequences or shortcomings of the technology. It is important for the company to be transparent and honest about any limitations, potential risks, or unintended consequences associated with the use of the technology. By acknowledging and addressing these aspects, the company demonstrates responsibility and a commitment to user safety and satisfaction. This transparency allows users and stakeholders to make informed decisions and

provides an opportunity for the company to actively work towards mitigating any negative impacts.

Now that you have thought hard about the transparency of this technology, what improvements would you like to make? List them below.

Enhance transparency in algorithmic decision-making processes.

Provide clear and accessible documentation.

Establish channels for user and stakeholder engagement.

Conduct regular audits and assessments.

Continuously communicate updates and improvements.

Proactively engage with external experts and regulatory bodies.

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Sustainability
Is your technology environmentally sustainable?

In what way is the direct and indirect energy use of this technology taken into account?
Direct and indirect energy use is taken into account by designing the technology with energy-efficient components, optimizing power consumption, considering the energy footprint of the supply chain, conducting life cycle assessments, and implementing sustainable design principles to minimize energy consumption throughout the technology's life cycle.

Do you think alternative materials could have been considered in the technology?
Yes, alternative materials could have been considered in the technology to potentially reduce environmental impact, enhance resource availability, and improve end-of-life recycling options.

Do you think the lifespan of the technology is realistic?
Yes, the lifespan of the technology is designed to be realistic, considering factors such as durability, maintenance, and technological advancements.

What is the hidden impact of the technology in the whole chain?

The hidden impact of the technology in the whole chain refers to the indirect environmental and social consequences that occur upstream and downstream of its use. This includes the environmental footprint of the supply chain, manufacturing processes, transportation, as well as the end-of-life disposal and recycling impacts, which collectively contribute to the technology's overall sustainability impact.

Now that you have thought hard about the sustainability of this technology, what improvements would you like to make? List them below.
1. Enhanced Energy Efficiency
2. Sustainable Materials
3. Extended Lifespan
4. Responsible End-of-Life Management
5. Supply Chain Sustainability
6. Life Cycle Assessments
7. User Education and Awareness
8. Collaboration and Partnerships

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Future
Did you consider future impact?

What could possibly happen with this technology in the future?
The technology could potentially alleviate congestion and reduce traffic in areas where parking is limited. Visitors would no longer need to circle around buildings or drive long distances to find parking, leading to smoother traffic flow and reduced carbon emissions.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one utopian scenario.

Utopian Scenario: In a city of the future, advanced parking technology has revolutionized the urban landscape. Autonomous vehicles seamlessly navigate to available parking spots, eliminating congestion. Underutilized parking structures are transformed into vibrant green spaces, fostering community engagement and creating a sustainable, car-free city center.

Sketch a or some future scenario (s) (20-50 years up front) regarding the technology with the help of storytelling. Start with at least one dystopian scenario.
Dystopian Scenario: In a future controlled by parking technology, access to parking spaces becomes a privilege for the wealthy. The less fortunate struggle to find affordable parking options, leading to social division and increased inequality. The reliance on private vehicles persists, exacerbating congestion and environmental degradation, leaving marginalized communities isolated and burdened.

Would you like to live in one of this scenario's? Why? Why not?
In the utopian scenario, where advanced parking technology leads to cleaner air, reduced congestion, and vibrant communities, it may be appealing to many people. The availability of green spaces, efficient transportation options, and improved quality of life could make this scenario desirable.
On the other hand, the dystopian scenario presents a situation where parking technology exacerbates social inequality and environmental degradation. This scenario would likely be less desirable, as it perpetuates divisions between socioeconomic classes and fails to address the broader issues of accessibility and sustainability.
Ultimately, the desirability of a scenario depends on individual values, priorities, and perspectives. Different people may have varying opinions on what constitutes an ideal living situation.

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What happens if the technology (which you have thought of as ethically well-considered) is bought or taken over by another party?
If the ethically well-considered parking technology is bought or taken over by another party, there is a risk that the new owner's intentions or practices may deviate from the original ethical considerations. The technology could be altered or misused, potentially leading to negative consequences such as increased surveillance, data misuse, or biased allocation of parking resources.

Impact Improvement: Now that you have thought hard about the future impact of the technology, what improvements would you like to make? List them below.
Prioritize equity
Sustainable transportation integration
Data privacy and security
Community engagement
Environmental considerations
Flexibility and scalability
Transparency and accountability
Continuous evaluation and improvement