[0004] In addition, a POS device or other terminal may be configured to generate an NFC field for conducting a transaction with a contactless card that may require less power than other forms of wireless communication. However, the reduced power requirement of NFC fields may cause NFC to be a weaker and less reliable than more power-intensive forms of wireless communication. Thus, the benefit of a reduction in power consumption for a POS device or other terminal generating an NFC field may have a detrimental effect on transaction speed and/or reliability and may lead to more frequent disruption of transactions. This effect may be particularly detrimental when the contactless card is communication with a mobile device through an NFC field generated by the mobile device.

[0005] These and other deficiencies exist. Accordingly, there is a need to provide users with an appropriate solution that overcomes at least some of these deficiencies to provide data and transaction security, authentication, and verification for contactless cards, as well as increasing the reliability and speed of transactions involving contactless cards.

SUMMARY

[0006] Aspects of the disclosed technology include systems and methods for performing an action, transaction, or other operation between a transmitting device, such as a contactless card, and a receiving device, such as a client device. Various embodiments describe systems and methods where a state machine is used to facilitate the resumption of the action, transaction, or other operation following a disruption.

[0006a] An aspect provides system comprising a memory containing a state machine, and a processor, the processor in data communication with the memory. The state machine is configured to communicate with an application comprising instructions for execution on a receiving device and record one or more data operations between a transmitting device and the application, preserve, upon a communication interruption between the transmitting device and the application, the most recent data operation from the one or more data operations, and resume, upon resolution of the communication interruption between the transmitting device and the application,

a subsequent data operation at a step following the most recent data operation from the one or more operations.

[0006b] According to another aspect, there is provided a method performed by a system comprising a processor in data communication with a memory, the memory containing a state machine. The method comprises communicating, by the state machine with an application comprising instructions for execution on a receiving device, and recording, by the state machine, one or more data operations between a transmitting device and the application; preserving, by the state machine upon a communication interruption between the application and the transmitting device, the most recent data operation from the one or more data operations; and resuming, by the state machine upon resolution of the communication interruption between the application and the transmitting device, a subsequent data operation at a step following the most recent data operation from the one or more operations.

[0006c] According to another aspect, there is provided a contactless card in communication with a receiving device comprising a memory containing an application comprising instructions for execution on the receiving device, comprising a memory containing a state machine, and a processor in data communication with the memory. The state machine is configured to communicate with the application and record one or more data operations between the contactless card and the application, preserve, upon a communication interruption between the contactless card and the application, the most recent data operation from the one or more data operations, and resume, upon resolution of the communication interruption between the contactless card and the application, a subsequent data operation at a step following the most recent data operation from the one or more operations.

[0007] Embodiments of the present disclosure provide a transaction system comprising: a contactless card having a processor and a memory; an application comprising instructions for execution on a receiving device having a processor and a memory; and a state machine in data communication with one or more of the processor of the contactless card and the

CLAIMS

1. A system, comprising:

a memory containing a state machine; and

a processor, the processor in data communication with the memory,

wherein the state machine is configured to:

communicate with an application comprising instructions for execution on a receiving device and record one or more data operations between a transmitting device and the application,

preserve, upon a communication interruption between the transmitting device and the application, the most recent data operation from the one or more data operations, and

resume, upon resolution of the communication interruption between the transmitting device and the application, a subsequent data operation at a step following the most recent data operation from the one or more operations.

2. The system of claim 1, wherein the state machine is further configured to:

store the most recent data operation in a memory, and

upon resolution of the communication interruption, retrieve the most recent data operation from the memory.

3. The system of claim 1, wherein the processor is configured to engage the state machine to record the one or more data operations performed by the transmitting device upon initiation of the transaction.

4. The system of claim 1, wherein:

the system further comprises a display in data communication with the processor, and

the processor is further configured display a communication status of the transmitting device.

5. The system of claim 1, wherein the one or more data operations comprise at least one selected from the group of a data communication, a data read, or a data write between the transmitting device and the receiving device.

6. The system of claim 1, wherein:

the transmitting device comprises a contactless card, and

the communication interruption comprises at least one selected from the group of a movement of the contactless card outside of a communication field generated by the receiving device and a movement of the contactless card outside of a communication range of the receiving device.

7. The system of claim 1, wherein:

the one or more data operations comprise a transaction, and

the state machine is further configured to resume the transaction at a step following the most recent data operation.

8. The system of claim 7, wherein the transaction comprises an EMV transaction.

9. The system of claim 1, wherein the most recent data operation was the last data operation occurring prior to the communication interruption.

10. The system of claim 1, wherein:

the one or more data operations comprise an authentication of a digital signature, and

the state machine is further configured to record the display of an indicator of success or failure upon completion of the authentication of the digital signature.

11. A method performed by a system comprising a processor in data communication with a memory, the memory containing a state machine, the method comprising:

communicating, by the state machine with an application comprising instructions for execution on a receiving device, and recording, by the state machine, one or more data operations between a transmitting device and the application;

preserving, by the state machine upon a communication interruption between the application and the transmitting device, the most recent data operation from the one or more data operations; and

resuming, by the state machine upon resolution of the communication interruption between the application and the transmitting device, a subsequent data operation at a step following the most recent data operation from the one or more operations.

12. The method of claim 11, wherein the one or more data operations comprise at least one selected from the group of a command and an authentication operation.

13. The method of claim 11, further comprising:

storing, by the state machine, the most recent data operation in the memory; and

retrieving, by the state machine upon resolution of the communication interruption, the most recent data operation from the memory.

14. The method of claim 11, further comprising:

engaging, by the processor, the state machine upon an initiation of a transaction,

wherein the initiation of the transaction comprises entry of the contactless card into a communication field.

15. The method of claim 11, wherein:

the system further comprises a display configured to present an application interface comprising a card read button, and

the method further comprises:

initiating, by the processor, the transaction upon receipt of a press of the card read button, and

engaging, by the processor, the state machine upon an initiation of a transaction.

16. The method of claim 11, wherein the most recent data operation was the last data operation occurring prior to the communication interruption.

17. The method of claim 11, wherein the communication interruption comprises at least one selected from the group of signal interference, signal blocking, and signal jamming.

18. A contactless card in communication with a receiving device comprising a memory containing an application comprising instructions for execution on the receiving device, comprising:

a memory containing a state machine; and

a processor in data communication with the memory,

wherein the state machine is configured to:

communicate with the application and record one or more data operations between the contactless card and the application,

preserve, upon a communication interruption between the contactless card and the application, the most recent data operation from the one or more data operations, and

resume, upon resolution of the communication interruption between the contactless card and the application, a subsequent data operation at a step following the most recent data operation from the one or more operations.

19. The contactless card of claim 18, wherein the one or more data operations comprises a generation of a cryptogram.

20. The contactless card of claim 18, wherein:

the one or more data operations comprise a transaction, and

the state machine is further configured to resume the transaction at a step following the most recent data operation.