Wireless Notification without Packet Decoding

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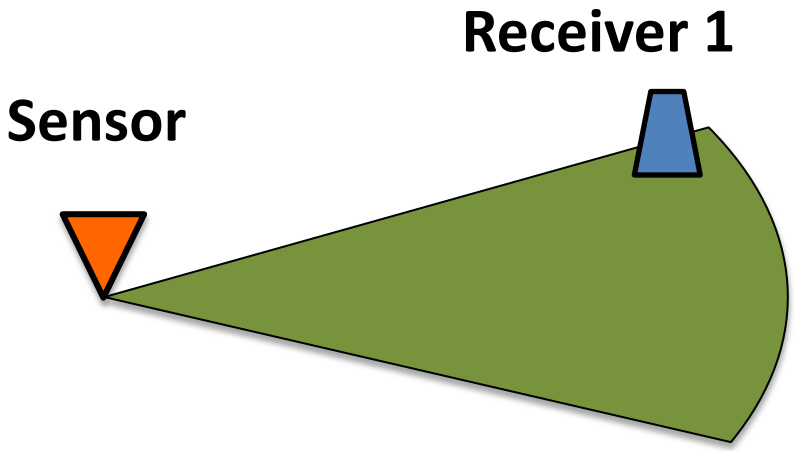
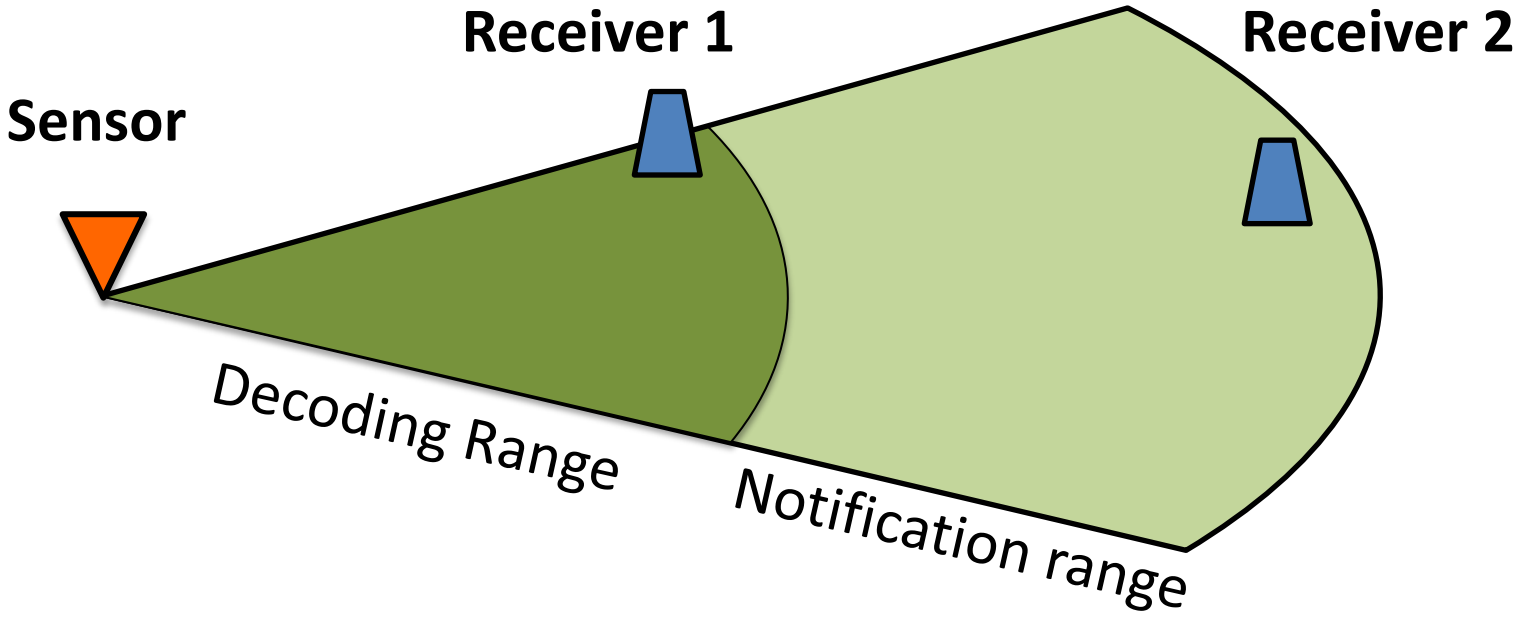


Packet Decoding

No information is known about the packet at decoding time.

Speculative Packet Reception

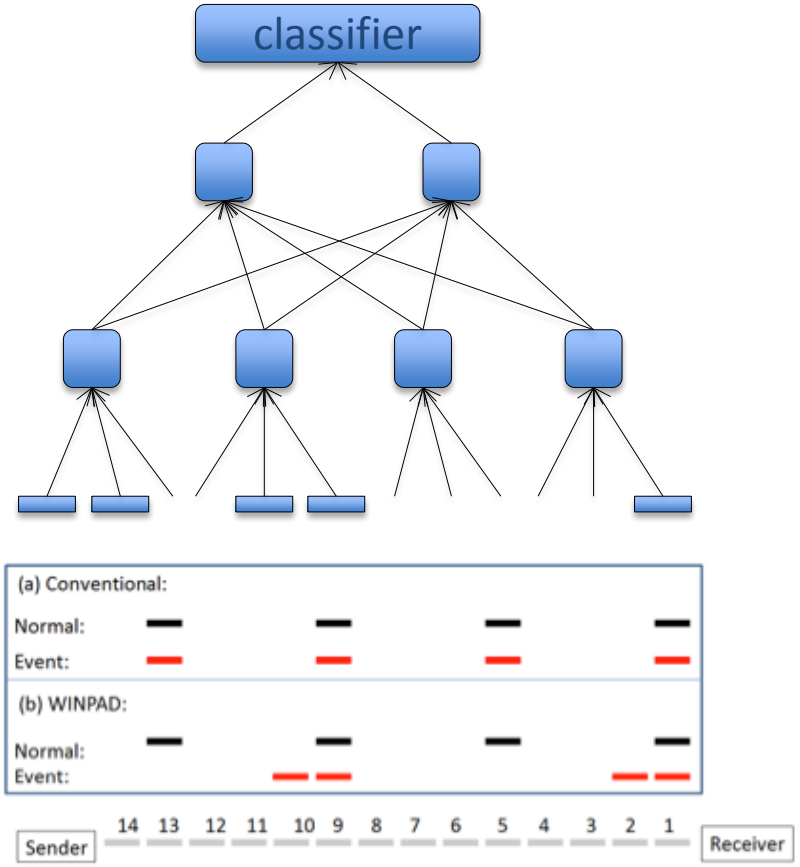
1. Predict arriving packets and their arrival pattern.
2. Verify prediction.



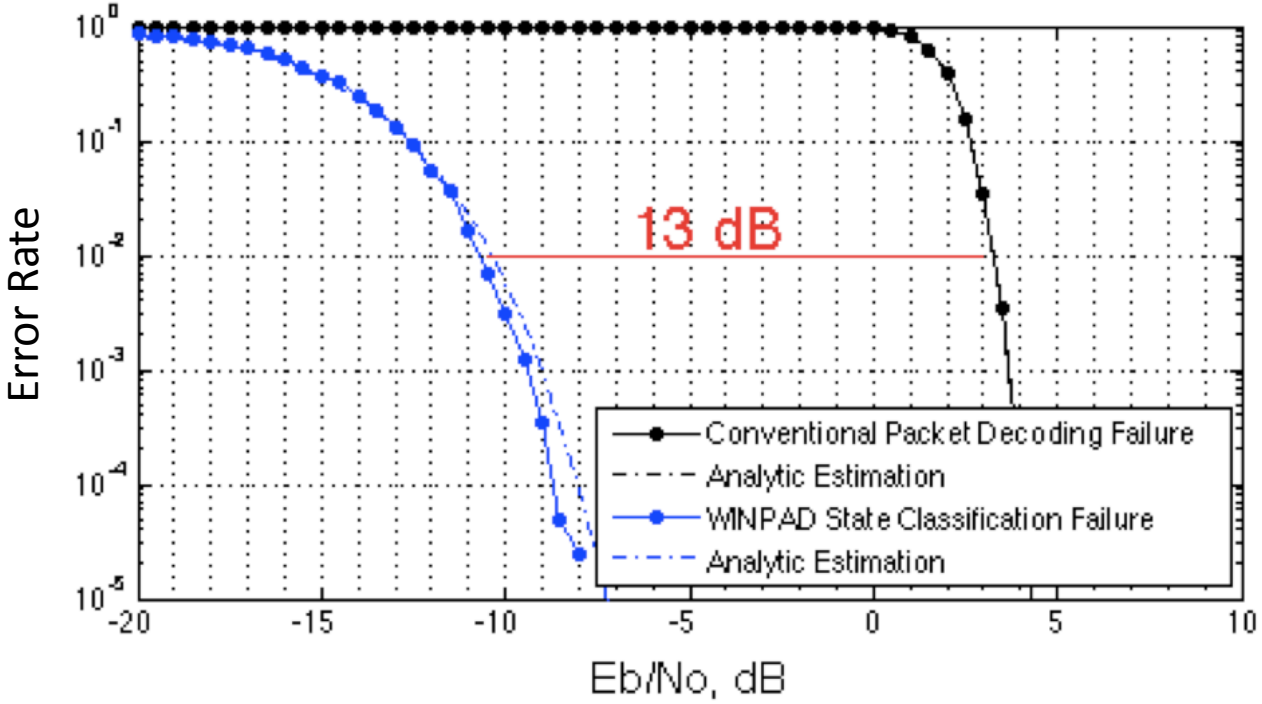
Speculative Packet Reception

1. Predict arriving packets and their arrival pattern.
2. Verify prediction.

   (maximum likelihood)



Performance Gain

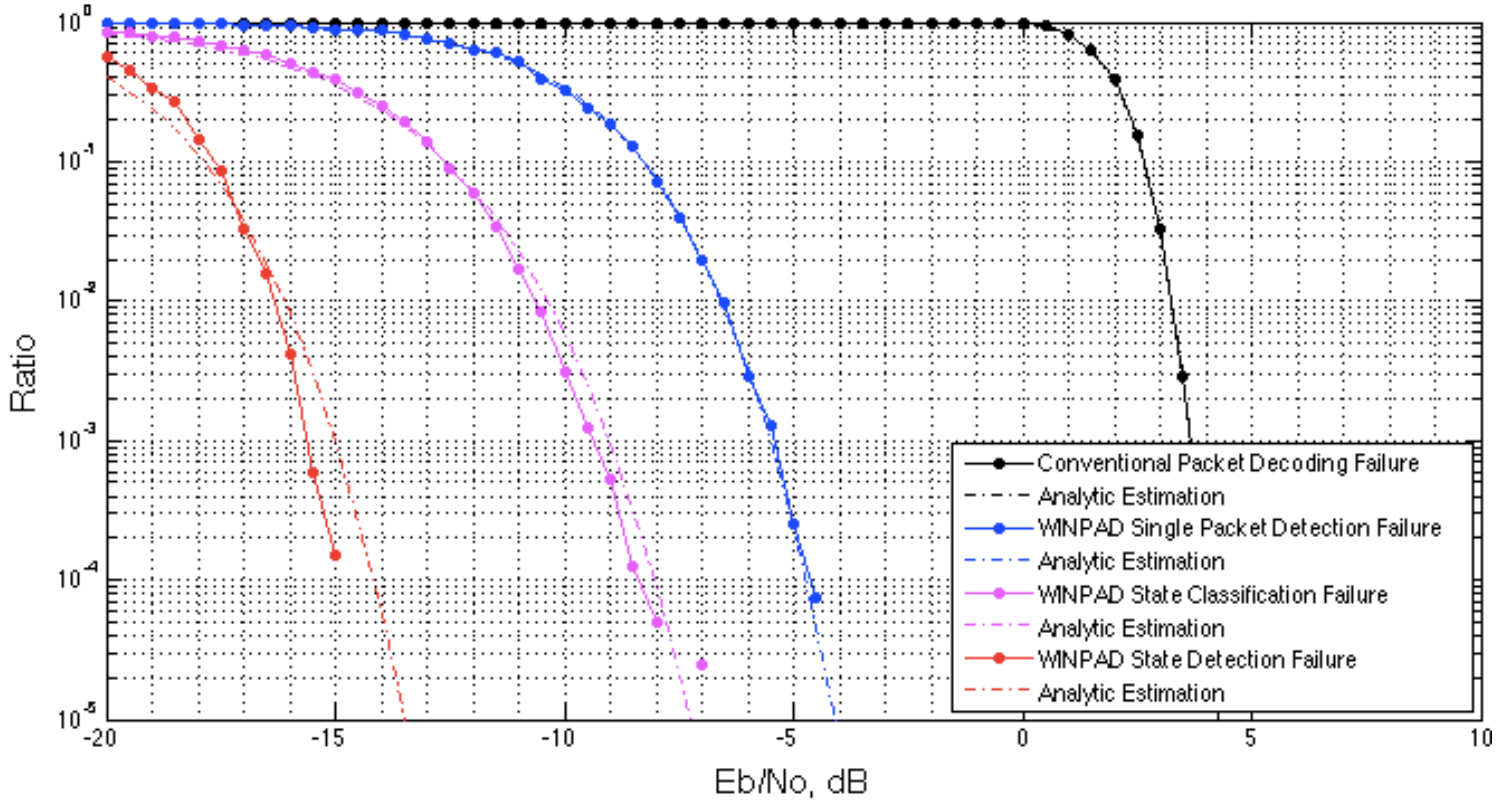


13 dB gain translates to 4x range in free space.

It is possible to build a protocol on top of existing protocols for low-rate transmission (notification). Our approach can increase the effective range for low energy sensors.

Conclusion

We have proposed a novel approach for low-power sensors to communicate at lower SNR compared to conventional approach.


Ratio
Eb/No, dB
Conventional Packet Decoding Failure
Analytic Estimation
WINPAD Single Packet Detection Failure
Analytic Estimation
WINPAD State Classification Failure
Analytic Estimation
WINPAD State Detection Failure
Analytic Estimation