IEEE P802.11  
Wireless LANs

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| AIML TIG July 2022 Plenary meeting minutes | | | | |
| Date: 2022-07-11 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Ming Gan | Huawei |  |  | ming.gan@huawei.com |
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Abstract

This document contains the minutes for AIML TIG July 2022 Plenary meeting.

Revision history:

* Rev0: First version of the document.

# Monday, July 11, PM3 session (19:30-21:30 ET)

1. The Chair, Xiaofei Wang (InterDigital), calls the meeting to order at 19:30 ET. The Chair notifies the attendees that the agenda is in [11-22-0847r2](https://mentor.ieee.org/802.11/dcn/22/11-22-0847-02-aiml-aiml-tig-july-2022-agenda.pptx).

* Ming Gan (Huawei) is serving as acting secretary in the absence of a permanent secretary
* Note that this is a hybrid meeting, with some participants in person and some participating online through a webex session

1. Move Motion #1: Approve Agenda:
   * Move to approve the agenda for AIML TIG as contained in [11-22/0984r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0984-00-aiml-sp-and-motion-booklet.pptx)

* Moved: Marc Emmelmann Seconded: Rui Yang
* Discussion: None
* Approved with unanimous consent.

1. IEEE-SA Policies and Procedure

The chair reviews the IEEE-SA Patent Policy:

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair. Speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

1. The chair goes through Other guidelines for IEEE WG meetings, Patent-related information, Participation in IEEE 802 Meetings, and Copyright. The Chair asks that it be minuted that the **Copyright Policy** was presented.
2. Chair provides an attendance reminder.
3. Move Motion #2: AIML Vice Chair Election

* Move to elect Ming Gan (Huawei) as the vice chair for AIML TIG as contained in document [11-22-0984r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0984-00-aiml-sp-and-motion-booklet.pptx)
  + Moved: Rui Yang Seconded: Sang Kim
  + Discussion: Some
  + Approved with unanimous consent

1. Technical Presentations [11-22/0950r2](https://mentor.ieee.org/802.11/dcn/22/11-22-0950-02-aiml-discussion-on-interaction-between-ai-ml-wireless-lan.pptx)

* Zinan Lin presented the contribution.
* Summary of Discussion
  + The last two bullets of Way forward in slide 10 may belong to the work of task group.
  + Different application may need different metric. For CSI feedback, CSI accuracy is most important. For data transmission, pay attention to throughput and latency.
  + Refer to the reference at the end of this presentation for the gain for these two shown methods of CSI, there is about 30% gain.
  + In reference 11, this paper shows only SU-MIMO, the index feedback could be extended to MU-MIMO, use slection in MU-MIMO is critical to index feedback
  + PER formance is 3dB worse than baseline, there is throughput gain.
  + 3GPP chose CIS as No. 1 use case, but this is not the only feature that AI can help.
  + For the channel feedback, the presentor doesn’t compare the shown scheme with subband beamforming as mentioned Wookbong and Shimi in TGbe.
  + The presentor didn’t try deep neuron network, which requires much training data
  + For CSI, it doesn’t bring back compatibility issue. For channel access, AI may bring unfairness issue.

1. Recess at 21:00 ET

# Wednesday, July 13, AM2 Sesstion (10:30-12:30 ET)

1. The Chair, Xiaofei Wang (InterDigital), calls the meeting to order at 10:30 ET. The Chair notifies the attendees that the agenda is in [11-22-0847r3](https://mentor.ieee.org/802.11/dcn/22/11-22-0847-02-aiml-aiml-tig-july-2022-agenda.pptx).

* Ming Gan (Huawei) is serving as acting secretary in the absence of a permanent secretary
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1. Agenda:

* Chair reviews proposed agenda found in [11-22-0847r3](https://mentor.ieee.org/802.11/dcn/22/11-22-0847-02-aiml-aiml-tig-july-2022-agenda.pptx)
* Discussion: None
* Agenda approved with unanimous consent.

1. IEEE-SA Policies and Procedure

The chair reviews the IEEE-SA Patent Policy:

If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair. Speak up now and respond to this Call for Potentially Essential Patents. **Nobody speaks/writes up**.

1. The chair goes through Other guidelines for IEEE WG meetings, Patent-related information, Participation in IEEE 802 Meetings, and Copyright. The Chair asks that it be minuted that the **Copyright Policy** was presented.
2. Chair provides an attendance reminder.
3. Technical Presentations [11-22/979r1](https://mentor.ieee.org/802.11/dcn/22/11-22-0979-01-aiml-applying-ml-to-802-11-current-research-and-emerging-use-cases.pptx)

* Szymon Szott presented the contribution.
* Summary of Discussion
  + ML algorithm is not in the scope of 802.11 and the logic is not part of standard. Need to define the range of CW.
  + Rate selction needs check allowed parameters and provides corresponding interfaces. RL is an example, could be any other ML approach
  + The existing reseach doesn’t have good answer for whether STA with AI infringes the throughput of legacy STA or not. With good algorithm, there is no impact on legacy STA’s throughput.
  + The presentor is not familiar with AI decode frames, and will offline provide answer.
  + ML could use camera to select beam sector and also can use history data
  + Encourage the presentor to contribute TIG.
  + Lots of research, with centralized ML. We still have OBSS, may have fairness issue. Some related methods will be developed.
  + Parameter exchange with peers depends on the use cases.
  + Rate selection and CW adjustment are good examples of parameter selection.
  + Provide data on improvement for rate slection offline.
  + Refer to reference 5 for the overhead analysis.
  + There is overhad for trained model of CW, especially for dense scenario
  + The presentor haven’t done research on multi-link operation with AI, will get back if there is progress.
  + Gap analysis for implementing AI to 802.11 should be provided

1. Technical Report [11-22/987r0](https://mentor.ieee.org/802.11/dcn/22/11-22-0987-00-aiml-aiml-tig-technical-report-draft.doc)

* The Chair, Xiaofei Wang, presented report
* Summary of Discussion
  + Gap analysis belongs to standard impact
  + Standards impact maybe depend on use cases
  + Backgroup info about machine learning should be helpful in this document
  + Performance evaluation could be included in report document, and it belongs to technical feasibility. The Chair thinks it is more suitable to the phase after TIG.

1. Next step in slide 23 in [11-22-0847r3](https://mentor.ieee.org/802.11/dcn/22/11-22-0847-02-aiml-aiml-tig-july-2022-agenda.pptx) is mentioned, no comments
2. Adjourned at 12:01 ET