CVN Update

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LBL Meeting
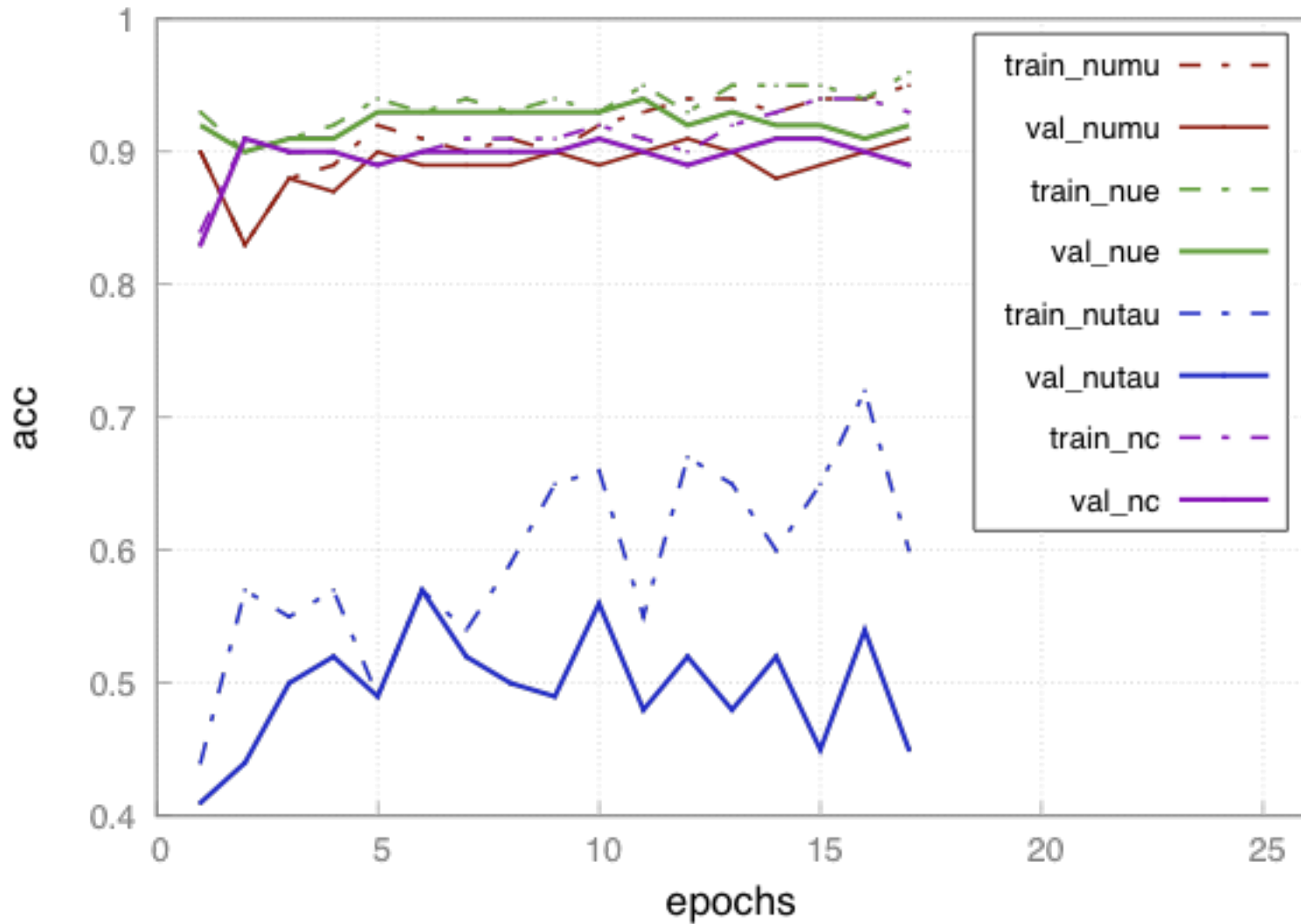
2 July 2018

Last CVN Update (18 June 2018)
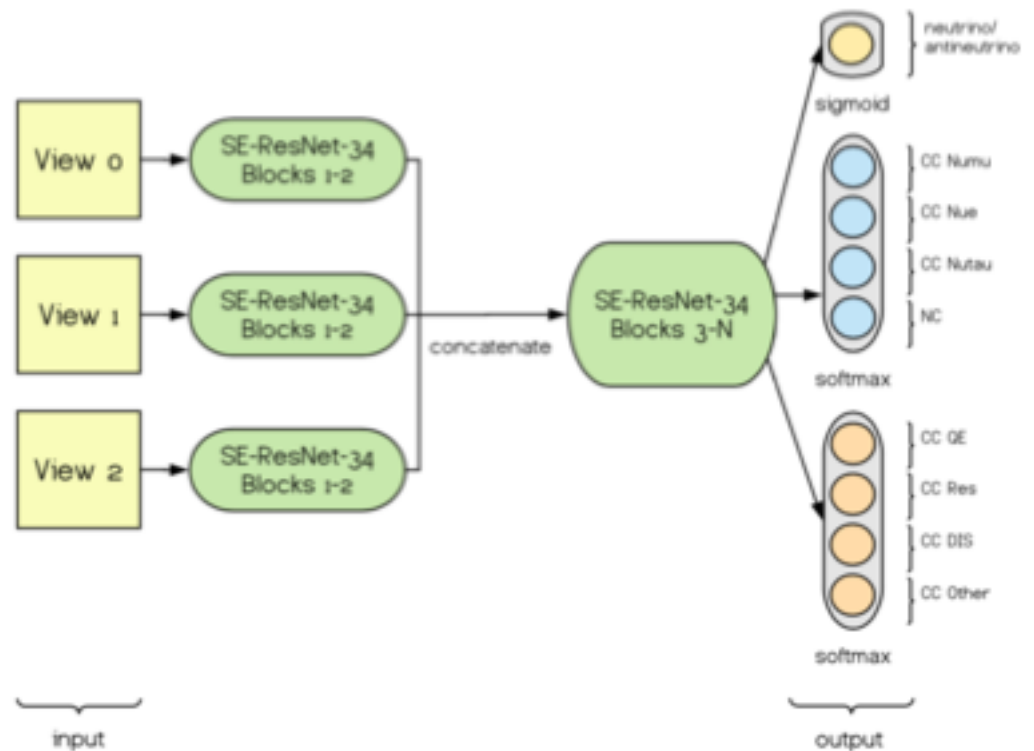
- Thirteen categories:

  - For CC ν_μ, CC ν_e and CC ν_τ: CC QE, CC Res, CC DIS and CC Other

  - NC

- The CVN returns probabilities for each event to be in the above categories

  - Results presented here are CC inclusive meaning we sum together the probabilities of the four sub-categories for each neutrino flavor.

- Focus on the CC ν_e and CC ν_μ event selections.

CVN neutrino accuracy

Moving forward

- From a single output network (thirteen categories) to a multi-output network.

- Output 1: neutrino/antineutrino.

- Output 2: CC Numu, CC Nue, CC Nutau, NC.

- Output 3: CC QE, CC Res, CC DIS, CC Other.

- Also divided the first few layers into three different branches.

Preliminary results

- Huge **nutau improvement**.

- Also training with a more balanced dataset.

  – Better global wire coordinate method.

- Hopefully not hurting the accuracy for the rest of the flavors.

	Old accuracy (Collaboration Meeting)	New accuracy (just started training)
CC Numu	0.94	0.92
CC Nue	0.92	0.89
CC Nutau	**0.47**	**0.78**
NC	0.91	0.86